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# THE BRICKBUILDER

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STANFORD WHITE



# THE BRICKBUILDER

VOL. 15 No. 12 DEVOTED TO THE INTERESTS OF ARCHITECTURE IN MATERIALS OF CLAY DECEMBER 1906

## Stanford White—His Work.

BY C. HOWARD WALKER.

THERE are in all architectural achievements, conditions necessary for conspicuous success which make great results rare indeed. There must exist the artist with the appreciation, the subtle mind and the skill to express his desires, with the creative faculty associated with discriminating choice, with the grasp of idea accompanied by delicate sense of relative proportion which place him in each of these respects as eminent in his art. But these are of little avail if he lacks the aid, supplementary as it may be to the intrinsic merit of the artist, of opportunity for expression, of stimulating demand for his performance. And even the union of skill and opportunity seldom attains results which leave nothing to be desired, or to the perfection of expression which is felt in the Greek sculptures and in the Renaissance. For any work of architecture is affected, not only by the will of the architect, but also by the exigencies of many other factors, the economies of conditions, the predilections and prejudices of patrons, and finally by the enervation that insidiously creeps in upon all artists, because of the deadly slowness of realization compelled by the lapse of time in the process of building. There are many who have visions, few to whom they come true; many whose conceptions are wonderful, but whose achievement hesitates before the end. Enthusiasm which is maintained throughout, a general concert pitch which never falters, despite the sordid sequence of minutiae, these are qualities which go far to make any achievement distinguished.

It is this tireless enthusiasm which makes possible the ability to control contradictory forces, to impress the individuality of the artist upon his work, to perfect his expression despite all opposition. It is rare, then, that a man is to be found, who is preëminently an artist, who can and does express himself, and whose enthusiasm never ceases, and who so molds his opportunities that they appear to have been without thorns, and who adequately completes his ideas.

Such an one was Stanford White. He associated with a keen appreciation of architectural proportions a sense of appropriate ornament and of decorative light and shade, and his designs so apparently carry conviction of mastery that to all appearances he was allowed free play to his imagination. And imaginative they are, whatever may

have been the source of the original suggestion. It has been said of him that his decorative sense was one of his strongest faculties, and if just proportions adequately clothed with ornament produce decoration, the contention is well made. He was in a peculiarly fortunate position. In a city where the accumulated wealth of the country was constantly seeking means of expression, with patrons who had little need to count cost, and whom he dominated by his fertile inventions, he had a background of the centuries of the great architecture of the past at hand, and an enthusiasm which carried everything before it. It is apparent that the man and the time had met. And it is all the more amazing that with his versatility of ideas, his love for detail, for intricate schemes of ornament, for multiple combinations of metals, of marble, of textiles, and of painting and sculpture, that each factor so admirably falls into its place in an organic and satisfying whole. His ornament may be luxuriant but it is not tortuous, his means of expression may be many, but the result is not confusing. The mutual relations of many elements are so admirably handled that the achievement seems the most obvious, natural thing which could have occurred, not the accomplishment of skill. This is the utmost test that can be applied to a work of art, that neither the machinery nor the *Deus ex machina* are manifest. And it is so rare, so unusual that when it occurs its recognition is seldom announced, pervading satisfaction taking the place of the assertion of its virtues. In a time and place where architecture *raisonné* is wearing its stigmata upon its forehead, it is refreshing to see architecture which does not produce the effect of effort, which is satisfied to exist in beautiful lines and form, without proclaiming noisily why each line and form was adopted.

It should, perhaps, be considered merely a part of Mr. White's appreciation of proportions that his sense of scale of moldings and of foci of ornament is so manifestly fine. Search his work as you may, there will be found none of the over accenting of axes, the spotting of heavy shadows for the sake of effect, which is so prevalent in a *rendu*, in a paper architecture. He realizes his materials and also realizes that cast shadows are deceptive and constantly vary in intensity and width, and that forms have

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mutual relation other than shadow relations. Refinement in moldings is a characteristic of his buildings, but this refinement is not accompanied by thinness or by any lack of virility. Surfaces are firmly held, shadows clean, strong and accurate. A veritable Orientalist in his delight in decorated surfaces, he restrains these carvings of detail and creates them as foils to broad, simple walls. But beneath all other qualities of his art, lies, apparently, a very just recognition of the languages of architecture, those languages which are known to the world at large as styles. In whatever language he speaks, he acknowledges its grammar and its syntax to such an ex-



THE CULLOM MEMORIAL AT WEST POINT.

tent that he has been accused of being merely imitative. In that sense we are imitative in speaking English. It is perfectly apparent in Mr. White's work that he thoroughly understood that pronounced styles did not permit radical change in their expression, and he no more thought of perverting their language than he would have thought of halving the height of an Ionic column in relation to its entablature. His discriminative sense was used in making the appropriate choice of a style for a building, and that style once selected, it was to its combinations that his efforts were devoted. And a very keen appreciation of the flexibility and of the inexorable characteristics of the different styles is manifest. He allows himself, for instance, much more freedom with the Spanish than with the Italian Renaissance. His eclecticism is very marked, and he seems to be equally at home in any style, comprehending thoroughly the individual qualities of each. The gamut is wide, extending from the Greek orders to Georgian and colonial work, excepting that no example of Gothic work is to be found.

Whether the opportunity was lacking or that the Gothic styles were unsympathetic to him, in any events the most of his work is in the classic styles. And a very remarkable series of buildings attest his knowledge of those styles. For instance, there is the Detroit Bi-centennial Memorial in Greek Doric, the Cullom Memorial at West Point in Greek Ionic with the simplicity of a Greek Stoa, the Knickerbocker Trust on Fifth Avenue and 34th Street, an adaptation of the Roman Corinthian of the Temple of Jupiter Stator. The porch of St. Bartholomew's in New York is one of the most interesting pieces of his work, as it so admirably unites the details of the Byzantine of the East and the Romanesque of the North, — styles, which by centuries and by place are so far separated, but which are children of one parent and closely resemble each other. The details of this porch are very beautiful. Mr.

White's affection for Italian Renaissance led him to adopt the varieties of that style to many purposes, whether it was simple Tuscan, as in the entrance to the Villard House; Roman, as in the Metropolitan Club; Parman, as in the Parkhurst Church, or Venetian in the Tiffany Building. In each there was a thorough sense of the qualities of the phases of the style and an ability to associate motives and variations with consummate skill. For instance, in the Metropolitan Club, frankly Roman as it is in mass and quality, there are touches of Umbrian detail, and the Tiffany Building, with the motif of the Vendramin, has Sienese balustrades. His eclecticism was therefore intelligent and skilled and led him to assemble styles, forms and details with great success. Perhaps one of his frankest adaptations is that of the little Veronese loggia of Fra Gioconda to the exigencies of the Herald Building in Herald Square. The Madison Square Garden, which was one of his favorite works, is a fine rendering of Spanish Renaissance, much more refined in detail than its prototype. Here, again, is a union of variations of Renaissance, the general conception being Spanish in suggestion, but the development of detail distinctly Italian in its delicacy. More recently several houses in Georgian Classic attest his appreciation of that style, a style prone to be heavy in other hands, but never in his, for there is none of his work to which that adjective could be applied.

The New Lambs' Club has an entrance and colonnade above, with greater delicacy of detail than was possible under the Georges, and the house, 12 W. 56th Street, is very beautifully proportioned. The little chateau with its terraces is again indicative of thorough appreciation of the qualities of style. Apart from his great skill as an



COURT ENTRANCE, METROPOLITAN CLUB.

architect, Mr. White had an ability to assemble all sorts of furniture, tapestries, etc., giving each its just relation to its neighbor and its place in the whole scheme of tone and color which is granted to but few to possess. The fitting and furnishing of beautiful rooms was one of his favorite occupations. A few of these rooms are shown in the illustrations and give ample testimony of his skill. His work throughout is full of sense of delicacy, of proportions, of form and of color, with a great eclecticism of taste and an ability to impress his idea, to express it and to take advantage of his opportunity in which he was indeed fortunate.

## Stanford White as those trained in his office knew him.

BY J. MONROE HEWLETT

AS time goes on the influence of the executed work of Stanford White in the development of the architecture of this country must inevitably become increasingly apparent; but to those whose fortune it has been to work under his direct supervision and so partake of the inspiration of his personality and gain some insight into his mental processes, the influence of the man himself will always transcend that of the achievements he has left behind him. His tremendous enthusiasm in his work invariably communicated itself to all who were engaged with him upon any given problem; and the rapidity with which he reached a conviction as to what he was trying to do in any given case was equalled only by his tenacity in adhering to that conviction and refusing to be satisfied until the result was brought absolutely into line with his mental picture. From this it resulted that he never ceased studying his work until its actual construction prevented further study; and though words of commendation from him to those working under him were few and far between, yet, when won, they were so spontaneous and sincere as to carry absolute conviction to the mind of the recipient and prove an incentive to redoubled effort.

The practice of architecture consists so largely in the effort to bring about an harmonious adjustment between æsthetic ideals and practical conditions seemingly inimical to them, and the tendencies to regard the latter and ignore the former are frequently so difficult to resist, that the example and personal influence of those rare spirits who, amid the stress of vast achievement, have adhered consistently to their ideals and have maintained undimmed their joy in the production of beauty, should be treasured as a thing of inestimable worth.

Our modern systems of architectural education perhaps lay too much stress on the production of designs as the principal feature of the architect's work. No one who has ever worked with Stanford White in the development of an architectural or decorative scheme and the supervision of its execution can have failed to realize that in his mind the execution of the design exceeded in importance the production of the design itself. To work with and under him was to appreciate as never before the fact that the building, not the drawing, is and should be the architect's chief concern; and that no vigor of conception or beauty of composition in the finished work, can compensate for the absence of that fragrance which results from the embodiment in it of knowledge and love of the refinements of form, color and texture.

It too often happens that the influence of an artist of ability is evidenced for the most part by the imitation of his mannerisms and eccentricities. In every part of the country there are to-day men practising architecture who have been subjected for a time to the personal direction of Stanford White; but in his case the tendency of this direction has been away from mannerism rather than towards it, because its basis was a broad knowledge and appreciation of all forms of Art, and the habit of never ceasing, until the last stroke of work is done, the effort to eliminate from it every kind of ugliness. Therefore, it is safe to say that his influence will not be a passing one, but even as that of the French school has been the most powerful factor in the orderly development of our architectural education, so that of Stanford White is and will continue to be preëminent in the creation and preservation of standards of good taste and refinement in our architecture and decoration.



KNICKERBOCKER TRUST.

BY F. L. V. HOPPIN

PERHAPS of the many who came into personal contact with him, none are better equipped to judge of his genius and ability than those who had the privilege of being for many years his students and his draughtsmen, for he was quite at his best when engaged in the heat of his work, and beset by the intricate problems of plan and design which, by his very progress of creation, he constantly encountered, but his versatility was marvellous, and had Stanford White

seriously undertaken to be a painter or a sculptor, there cannot be a shadow of doubt that he would have been among the foremost artists of his day.

His great knowledge of drawing and perspective enabled him to give instant expression and form to his conceptions through the medium of his well-trained office force.

For many years he found a rich field for his ability in the erection of numberless country houses, and it is to him in a very large measure that a desire for more substantial and architecturally beautiful residences of this nature was created. His frequent visits in Europe, and especially in Italy, in the early years of his practice, gave him a sense of proportion and a versatility of expedient in designing that was remarkable, and he and his firm soon became the exponents of the Italian Renaissance in this country, and their devotion to classic lines in all their work was consistent throughout and from which style they rarely departed.

His nature was an impatient one, yet generous to a



## THE BRICKBUILDER.

fault, his manner often brusque and harsh, yet did he realize that he had given hurt to any one he would go to infinite pains to relieve the distress he had caused.

He sometimes fell into the common error of over-ornamentation in his exteriors, and frequently in his interiors, impelled by his innate sense of color and combination of values, would daringly mix his epochs which, carried out by another hand, would have been ludicrous and bizarre in the extreme, but which, almost invariably, were peculiarly charming, and in some instances magnificent.

He was extremely optimistic by nature, and enthusiastic to a degree, which latter he invariably conveyed to all about him whether clients, draughtsmen or builders, and in his unflagging spirits and enormous vitality would accomplish a vast amount of work. He had a wonderful memory and grasp of detail, and his knowledge of precedents and where to lay his hands upon them, whether in his library or elsewhere, was of the greatest service to him, and most remarkable. He was intensely keen in his work, his attitude towards his clients was very convincing, his enthusiasm for his conceptions was tremendous in its courage of conviction whether in small or large undertakings, invariably.

He was a born leader and instinctive superintendent, for he always had the instant sympathy and coöperation of the builders and workmen, who cheerfully at all times catered and responded to his directions and impulses, whether they considered them vagaries or otherwise. He was possessed of a charming sense of humor, and was a most delightful companion.

His place in the world of art will always be most unique and individual and his influence and that of his colleagues has been a most distinct factor in the development of American Architecture and Decoration.

BY ALBERT RANDOLPH ROSS.

STANFORD WHITE—for how many things of beauty is this name the exponent, and what an aristocrat in the art of architecture and adornment was the man! For his intensely interesting and remarkable personality I only wish I could fittingly express my admiration.

I shall never forget the first time I saw him, many

years ago, at his old office in No. 52 Broadway, where I was sitting with my heart in my boots waiting to see Mr. Mead, with the hope of being taken into their office as a draughtsman. Swish! bang! went the outer double swing doors; swish! bang! went the inner swing doors, and in much less time than it takes to tell there shot across my vision a lithe, fierce-mustached giant with a big hat on a head of close-cropped blond hair standing straight out in every direction. That was Stanford White, and was generally characteristic of the immense nervous vitality that enabled him to accomplish such an incredible amount of work that would have sent most men into nervous prostration. But there were times, however, when this mad haste abated. At the end of the

short winter days when the office lamps were lighted and all but a few of the faithful draughtsmen had gone to their homes, and the worry of the day's routine was over, in the most affable frame of mind, softly whispering to himself, he found the time and inclination to carefully review his work and put the finishing touches to his conceptions. Those were indeed happy times. Then were he and his two associates in their best vein; then did McKim "go fishing," as he was pleased to call pouring over old volumes of Roman masterpieces, and then did they admire or aid with criticism each other's work.

His designs were conceived spontaneously and he was little bothered by precedent or the formal principles of architectural planning. In directing his draughtsmen he expressed his thought always with a pencil rather than by discussion. After covering, oftentimes, yards of tracing paper with alternative suggestions for work under consideration, he would eliminate all but two or three of the most pleasing and turn the matter over to his draughtsmen to "do something" which he would either reject at sight or, if this "something" was found favorable, used it as the basis of future study.

Unlike the influence of his patron Richardson, in whose office I believe he received his architectural training, the study of his work or even an attempt to follow in his footsteps will make for the advancement of our architecture and her allies.

Men with such high and pure ideals in art are few indeed, and the many beautiful things he has conceived and left us will most fittingly commemorate this big, versatile, impatient and kindly man.



THE LAMBS' CLUB.

BY PHILIP SAWYER.

WHAT was Stanford White's contribution to the work of the firm which, well in the lead when he joined it, twenty-five years ago, is still alone in the scholarly character, the decorative beauty, the variety of the work which it produces?

What has been his part in developing the individuality of the design of this remarkable group of men which produced thoughtful, studied work a generation back and which preserves its enthusiasm and designs with freshness and spontaneity to-day?

Other firms do good work, produce notable buildings, and we acclaim them; but who else from such a charming beginning as the Casino at Narragansett Pier has gone on to develop such a range as that which includes the façade of the Boston Public Library, the approach to Columbia College, the Madison Square Garden tower, the detail of Mr. Morgan's library?

Who else builds at one time a railway station with the dignity and the scale of Rome; a church, which is a decorative study in colored terra cottas, in marbles, in polished granite, and in pictured brick; a utilitarian structure with the beauty of the Gorham Building, or such a quaint and home like house as the Colony Club?

While so many of us are tired and our work perfunctory, at the end of ten years' practice, McKim, Mead & White show in their design, the vitality and light-heartedness of perennial youth.

And it seems to me that this was in part Mr. White's contribution. He was an engine for energy, promising recklessly impossible things, and causing every one he came in contact with to accomplish them.

Never tired, never indifferent; you might find him hammering for the porter, hatless, his hands full of papers, at seven in the morning, and leave him striding up and down the deserted office at seven in the evening, while it was always likely that he would shoot in at any hour of the night, throw off his coat, and, pouncing upon a lone draughtsman, begin working upon a new problem, on the assumption, apparently, that sleep is unnecessary and night non-existent. Office hours meant nothing to him nor to any one identified with the work in which he was interested.

To work for him was at first a fearful experience, later an inspiration; a terse statement of the requirements, a few hieroglyphics and, we're off! on an endurance run, which, last it for days, or weeks, or months, never cooled.



To him, an artist, architecture meant color first, and form and texture next, and proportion afterward, and plan last of all. To handle material fitly, to adjust it to a new use, to devise its characteristic detail, to combine it with others consummately, to employ all that is beautiful in the old with all that is practical in the new; these things were a constant pleasure to him and to all who know and enjoy his work. I wonder how many, even among architects, appreciate how much the appearance of our cities—varied with light bricks and terra cottas—owes to his single initiative.

Quick to recognize ambition and capacity, he gave great latitude to a man of proved ability, generous credit for good work done, and he showed an habitual indifference to one's previous failures; a constant assumption that you were just the man for the job and capable of anything, which brought results from the unlikely material.



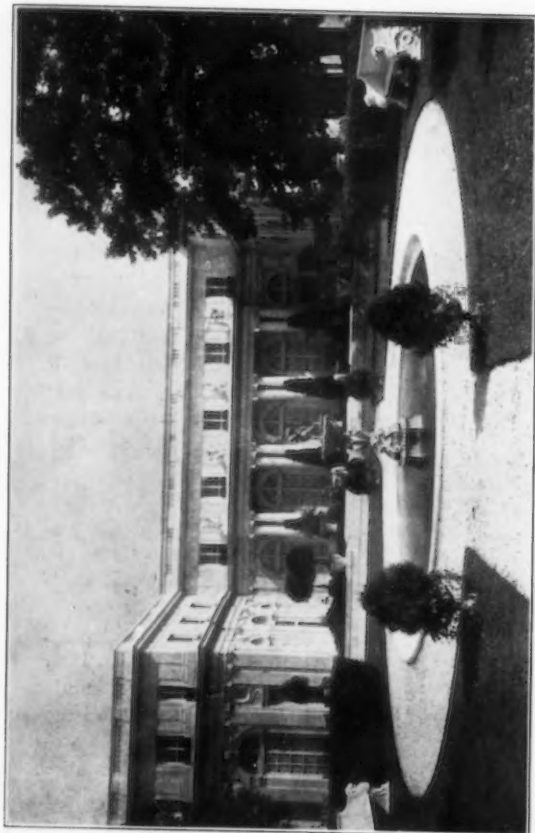
A CITY HOUSE

Full of originality, seething with ideas, he had that rare sense which prevented him from adopting anything new, merely for its newness. It must also be better intrinsically than any possible adaptation of the old if it were to win.

An experimenter always, the result was oftenest in the direction of some old beauty revived, new to the use and time, but centuries old in inspiration and of seasoned good.

In the important works of his life, a member of a firm, it is impossible (and undesirable) to attempt to sort out the work for which he was chiefly responsible. Even the personal characteristics enumerated are somewhat composite in their character, and are, some of them, truer of the firm than of any one of its members.

But whatever estimate may finally be made of the architectural work of our lifetime, we may be sure that the name of McKim, Mead & White will stand alone above their contemporaries, and that to this preeminence one of the most vital individualities of our time has contributed his share.



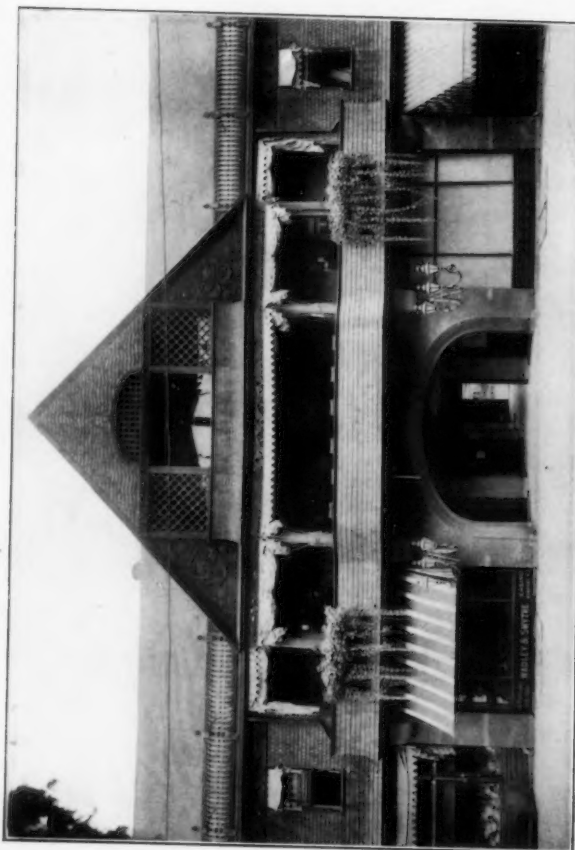
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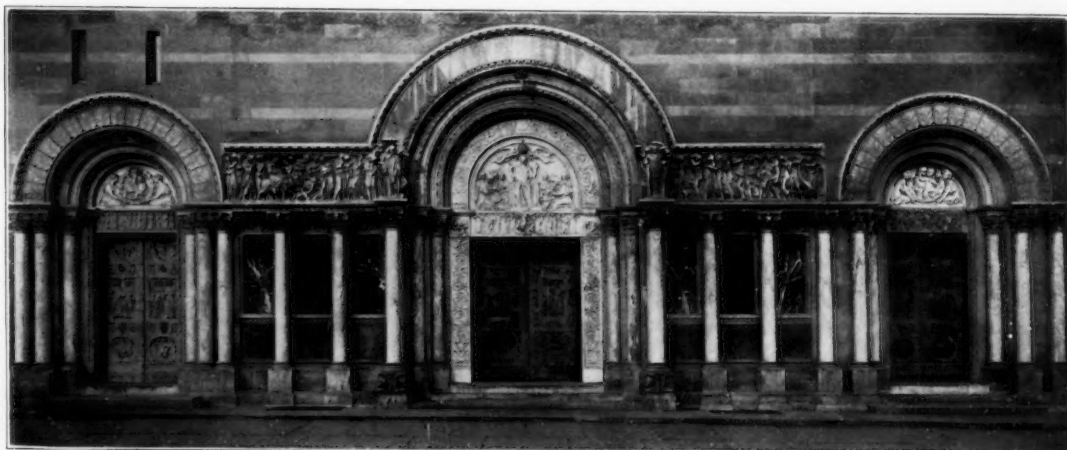


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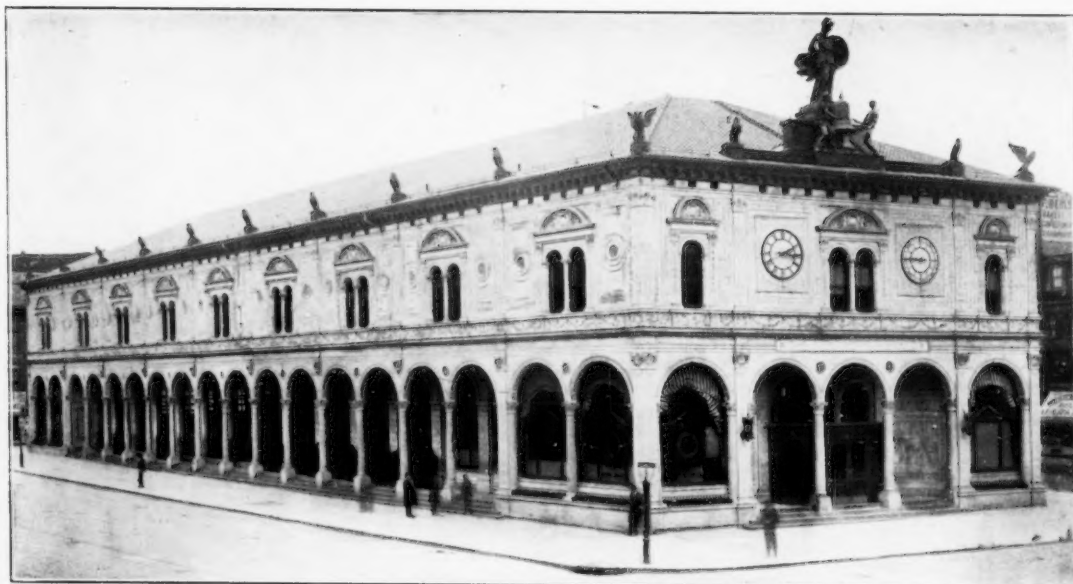




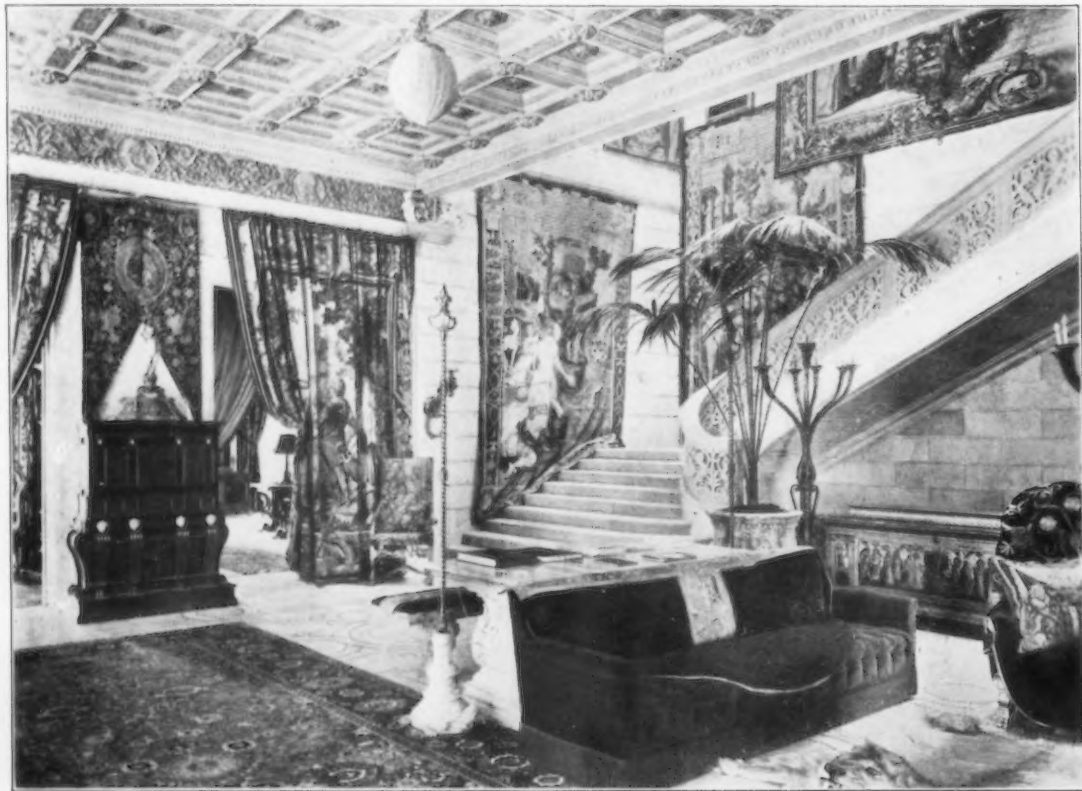
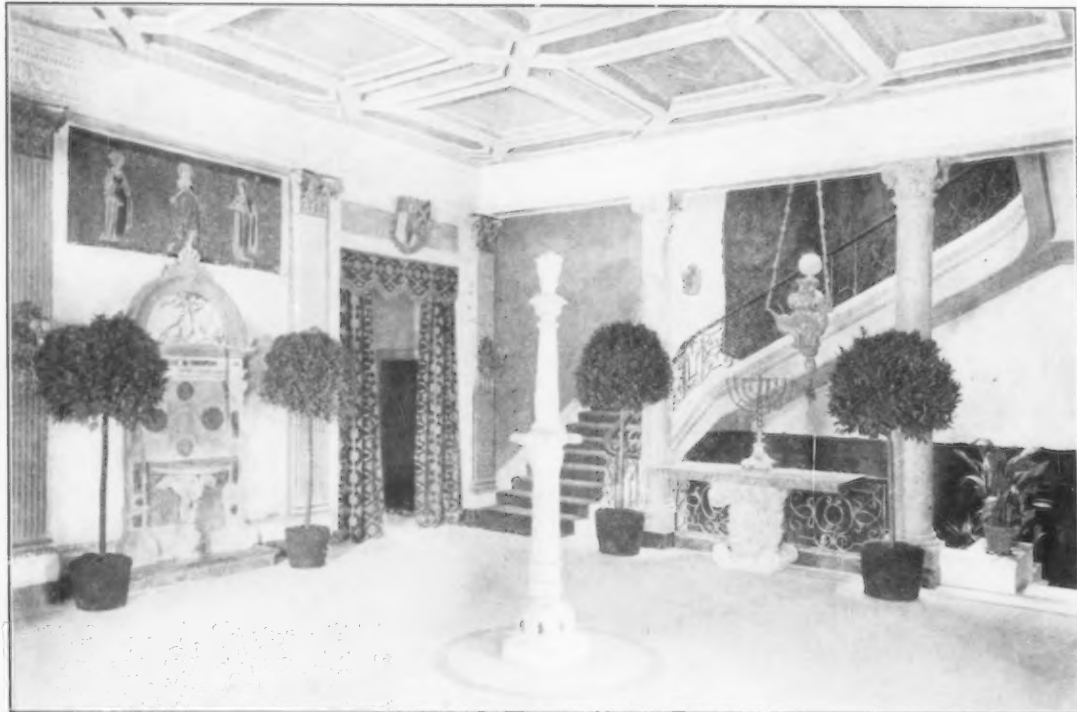
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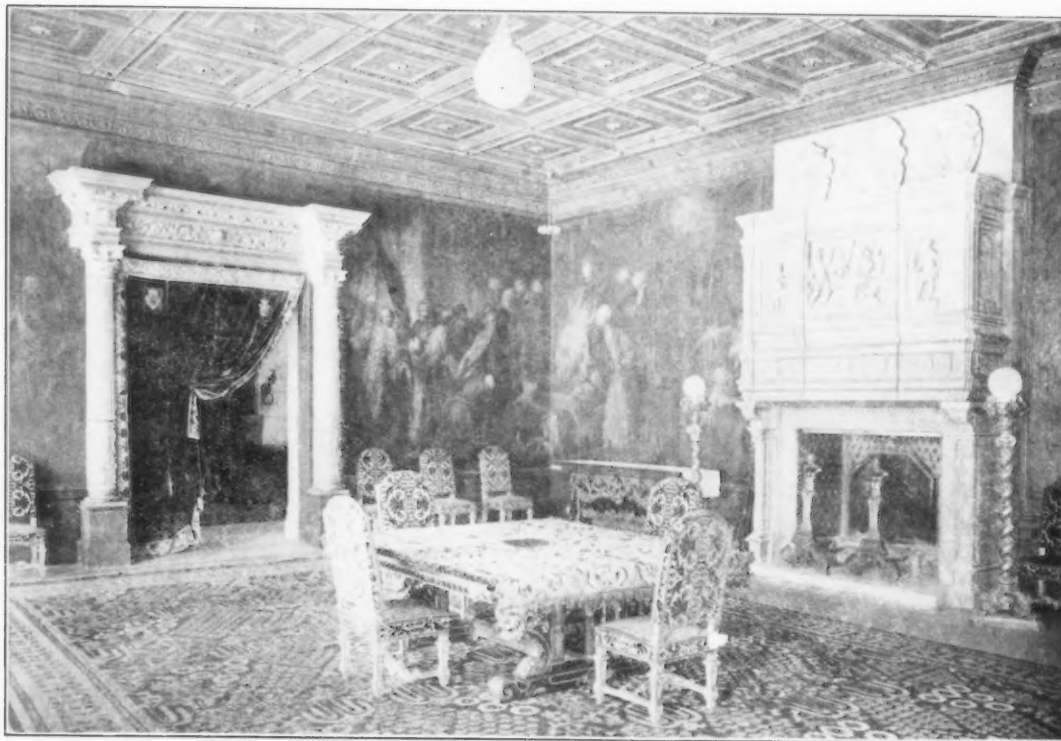
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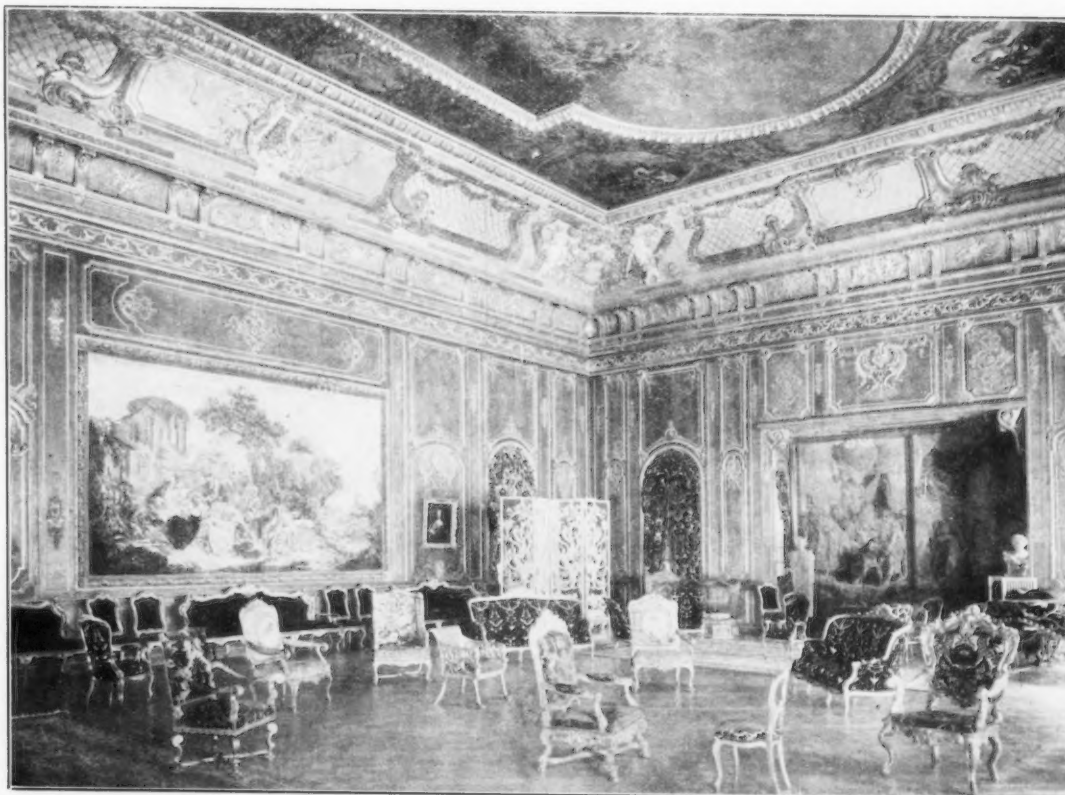
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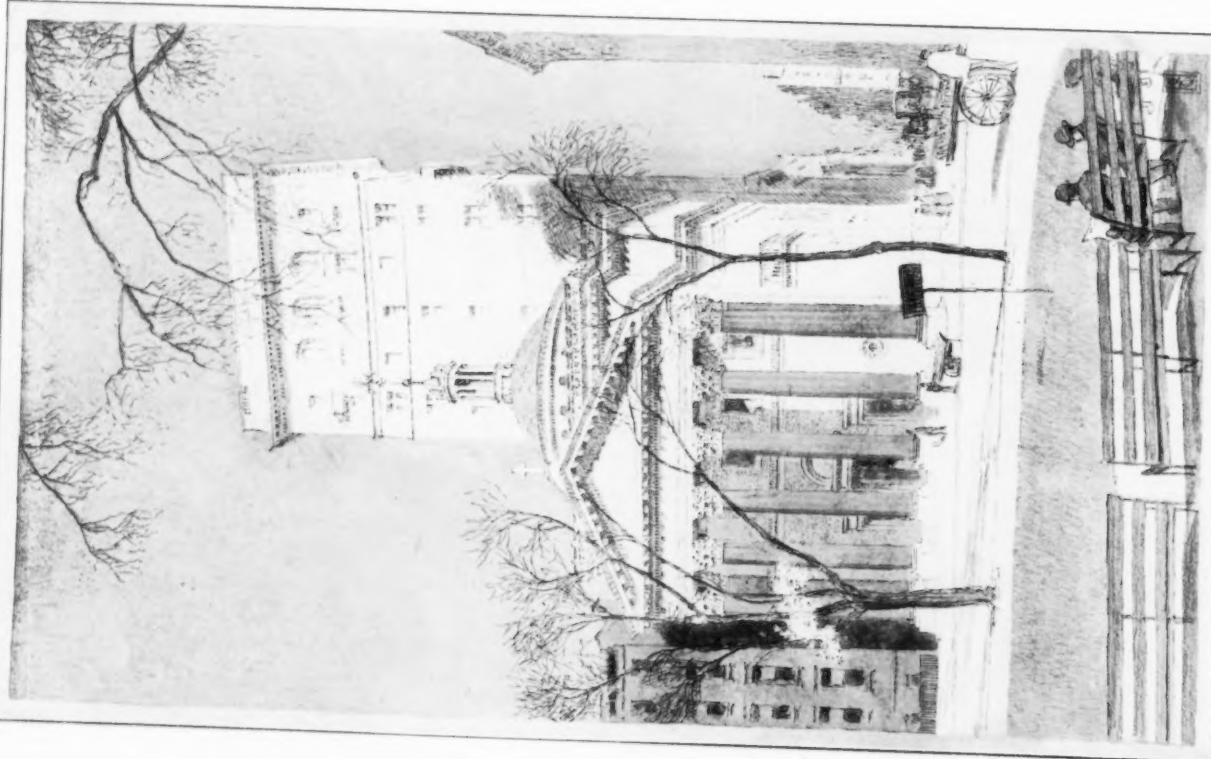


A DINING-ROOM IN PRIVATE RESIDENCE.

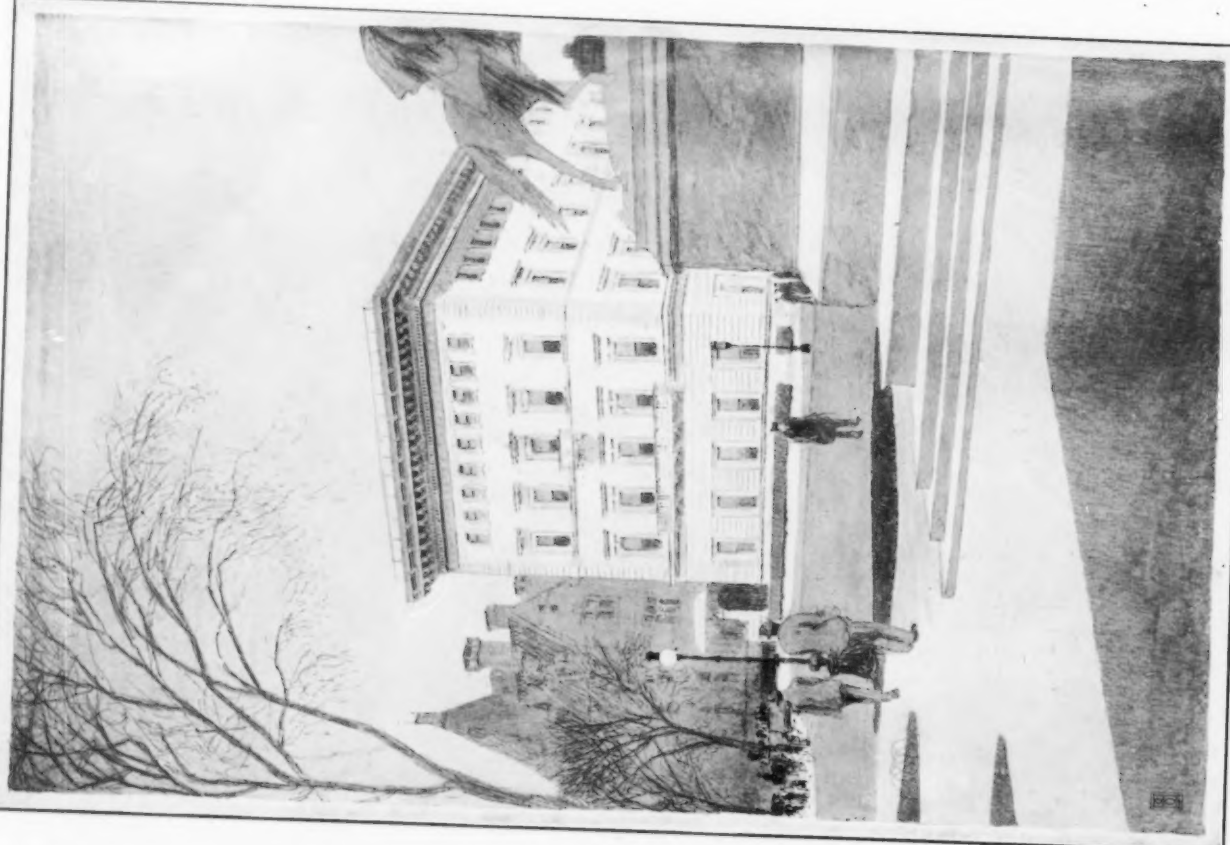


A SALON IN PRIVATE RESIDENCE.

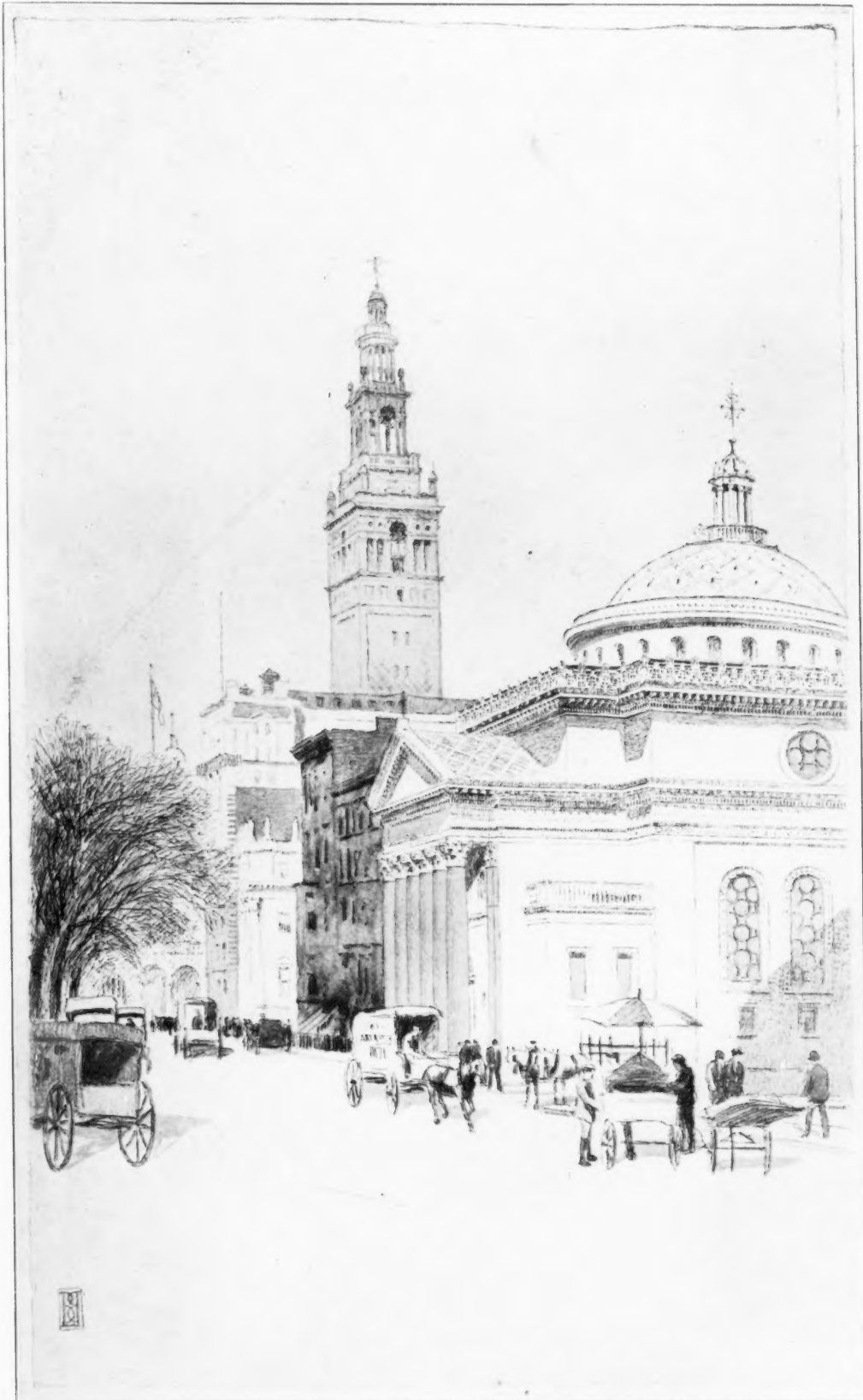




Drawing by Birch Burdette Long.  
MADISON SQUARE PRESBYTERIAN CHURCH.

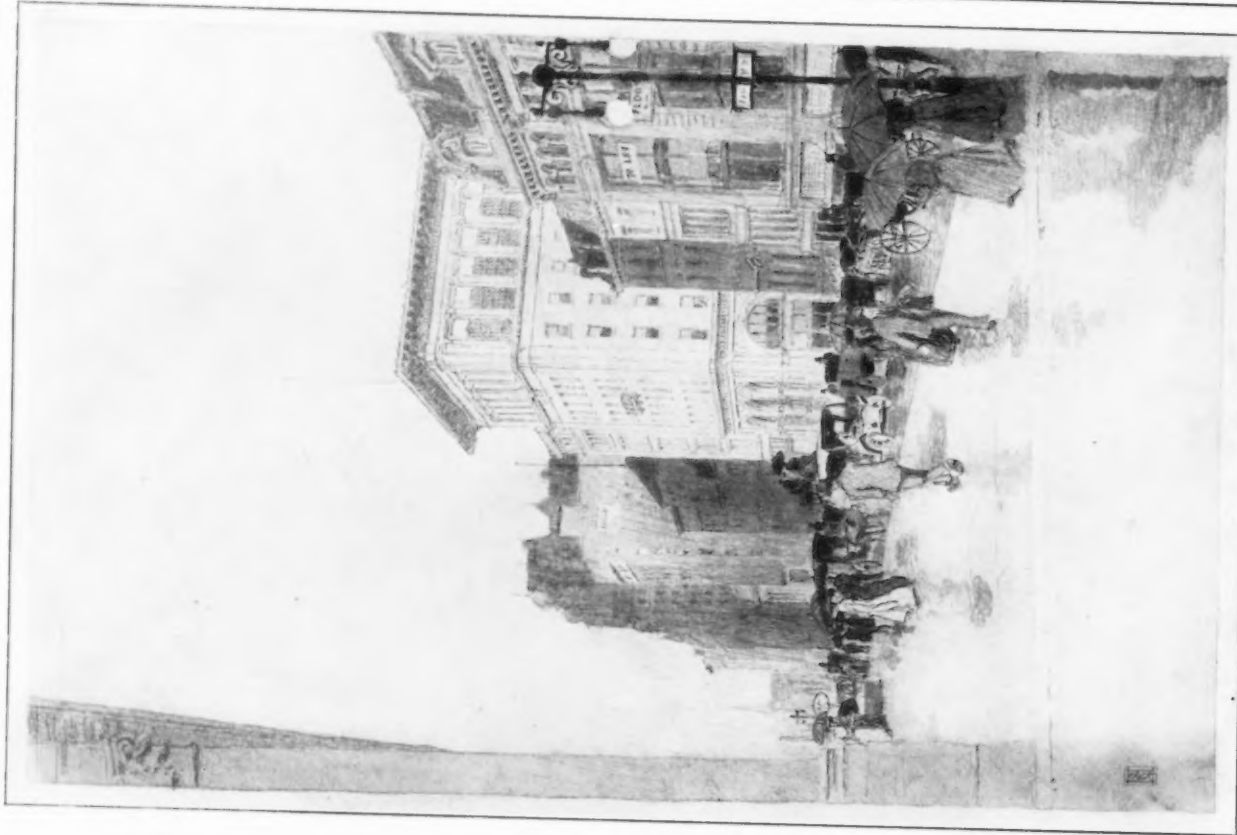


Drawing by Birch Burdette Long.  
THE METROPOLITAN CLUB.



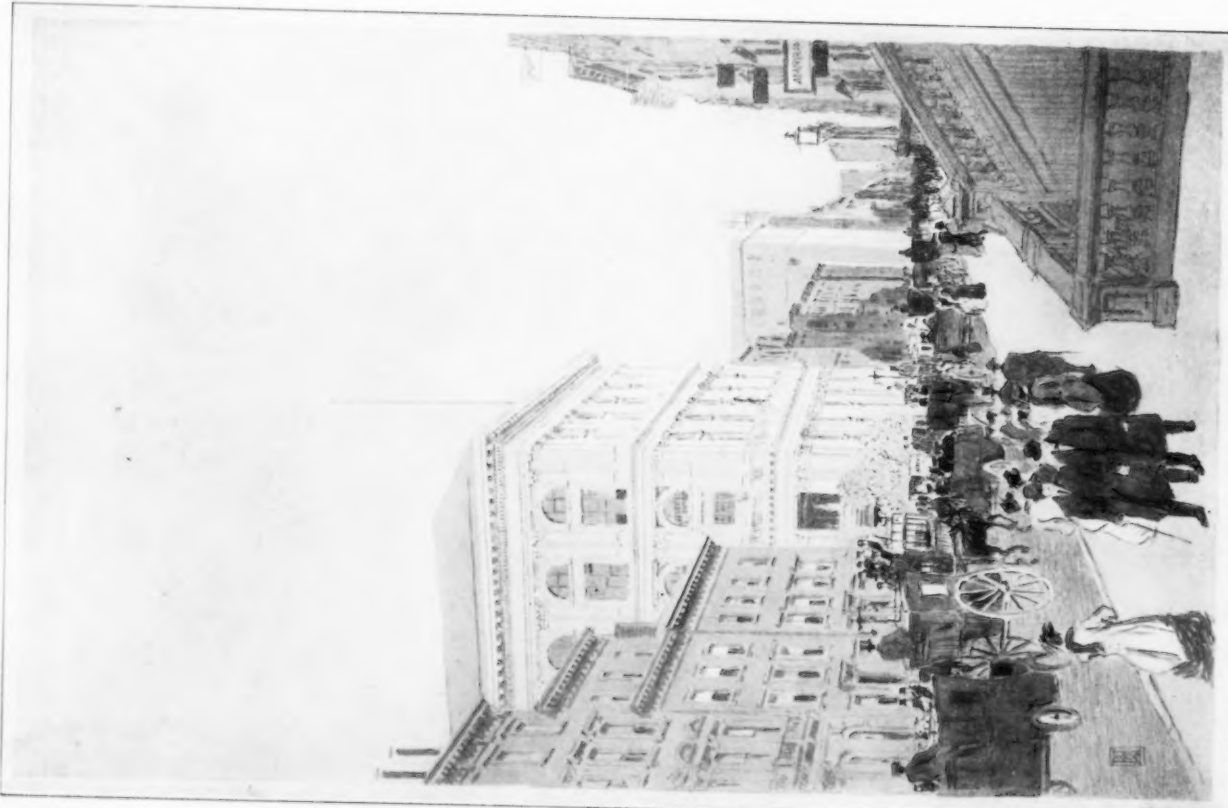
Drawing by Birch Burdette Long.

THE NEW PRESBYTERIAN CHURCH AND THE GARDEN TOWER.  
LOOKING UP MADISON AVENUE.



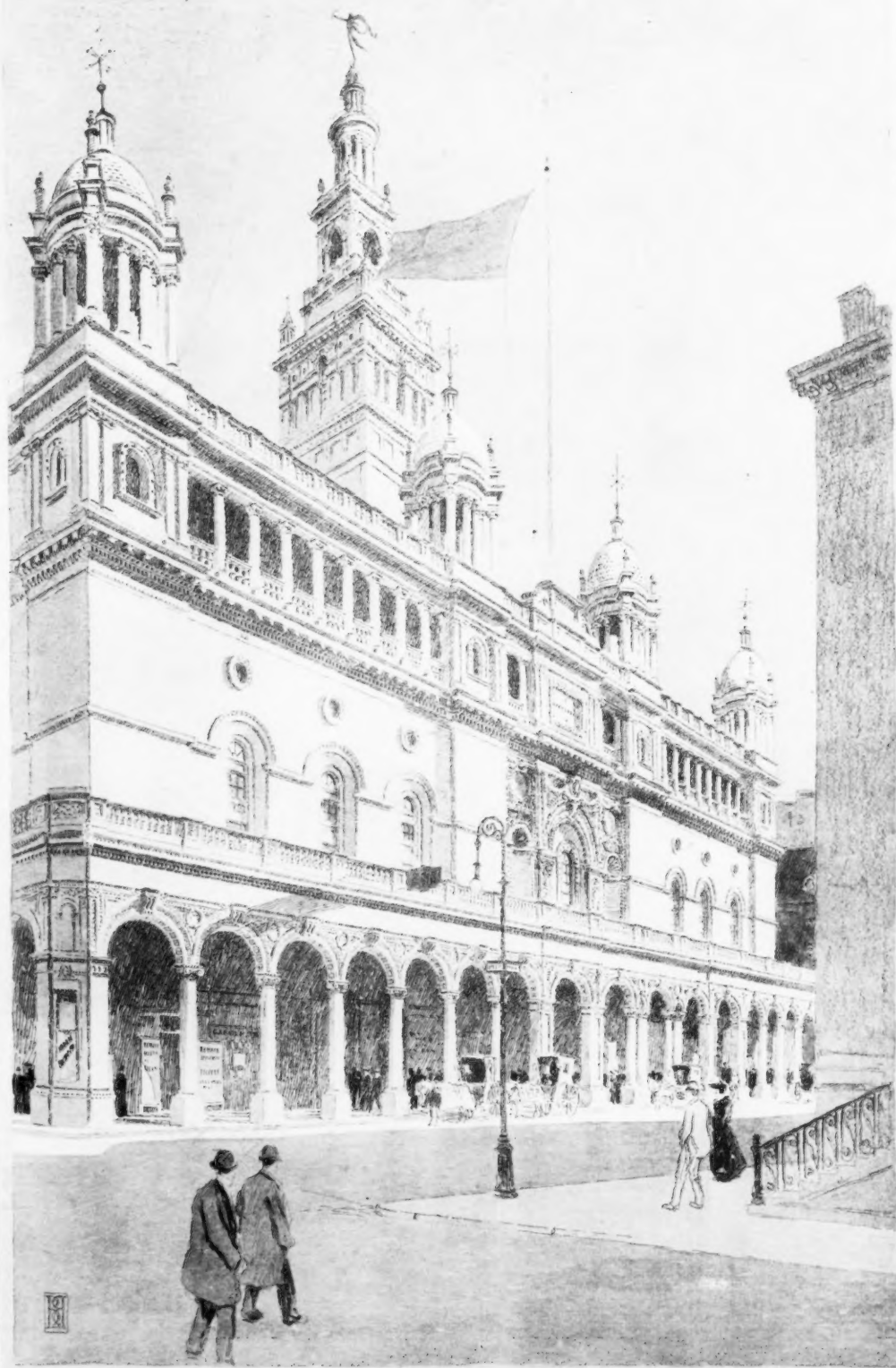
Drawing by Birch Burdette Long.  
THE GORHAM STORE.

LOOKING DOWN FIFTH AVENUE



Drawing by Birch Burdette Long.  
THE TIFFANY STORE.



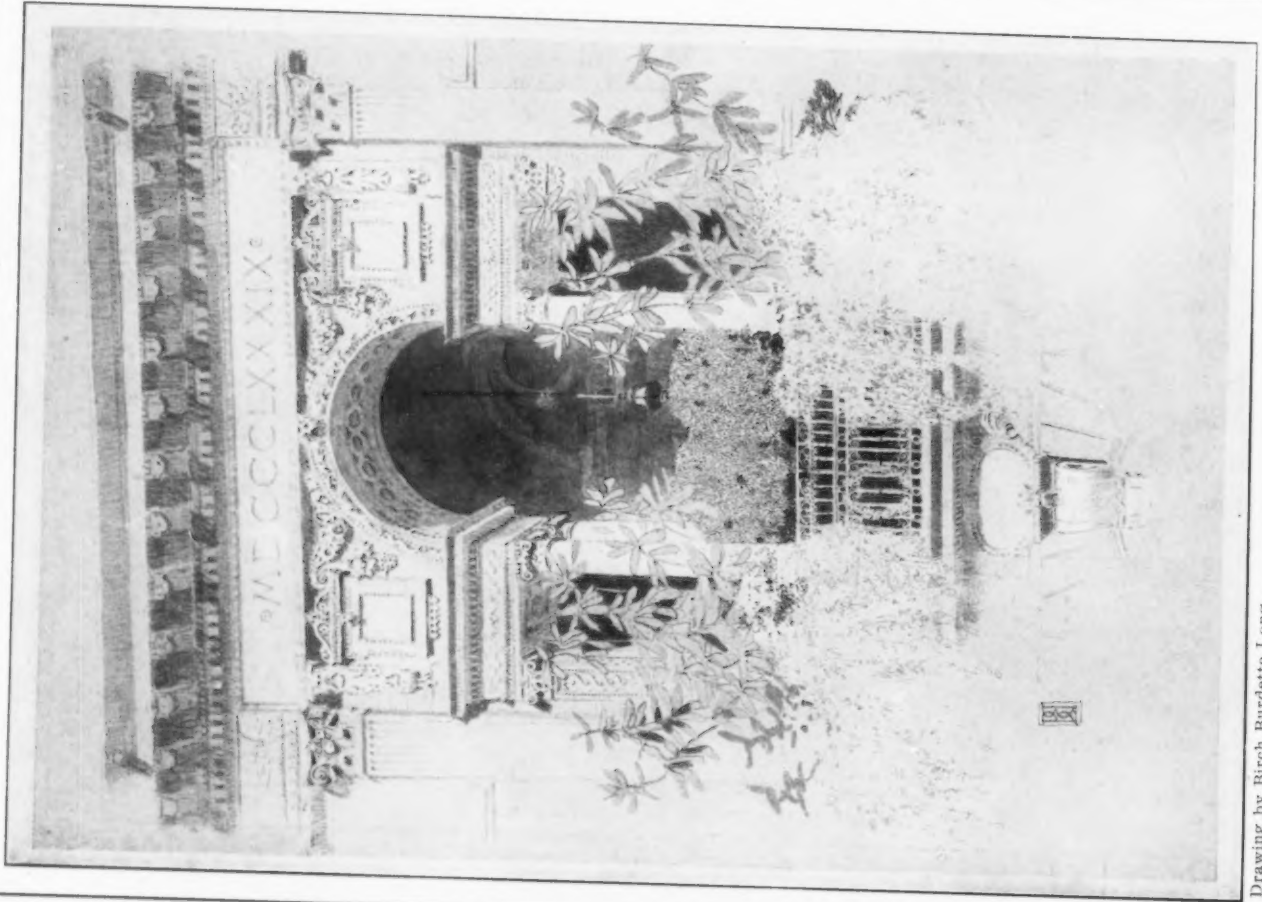


Drawing by Birch Burdette Long.

MADISON SQUARE GARDEN.



Drawing by Birch Burdette Long.  
THE COLONY CLUB.



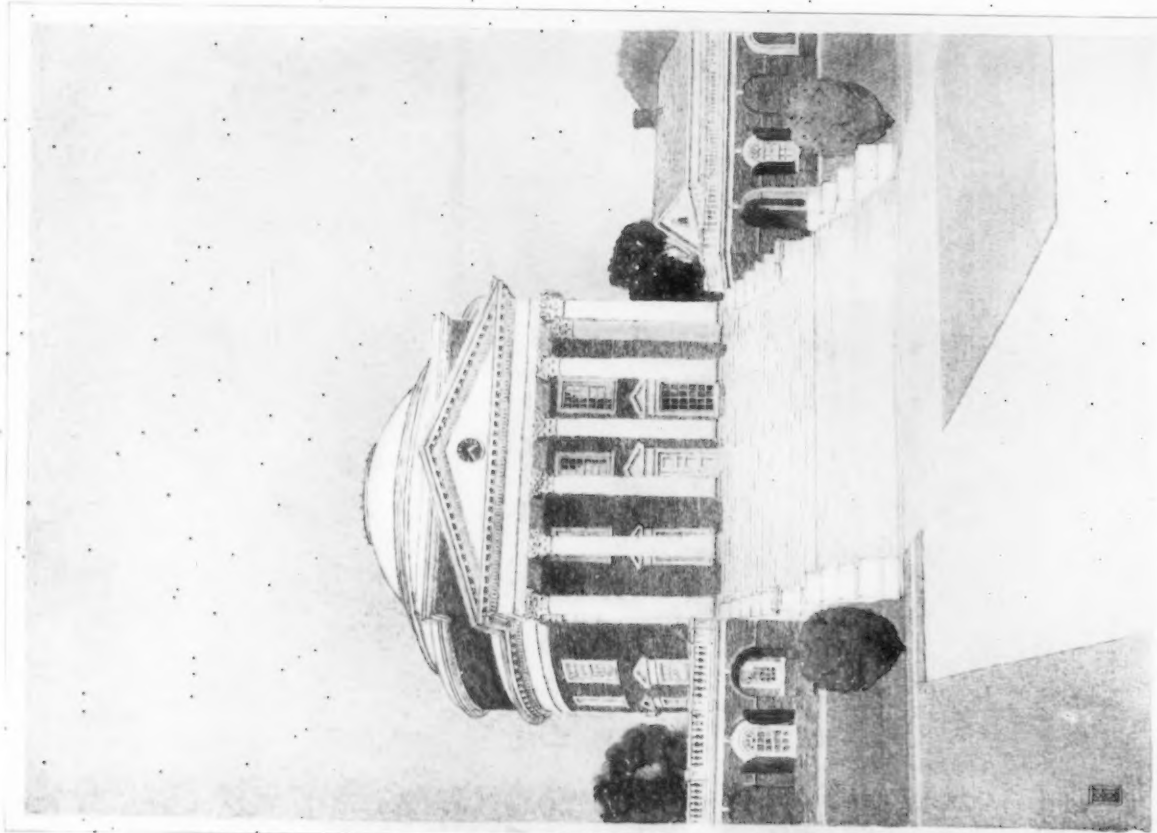
Drawing by Birch Burdette Long.  
LOGGIA OF THE CENTURY CLUB.



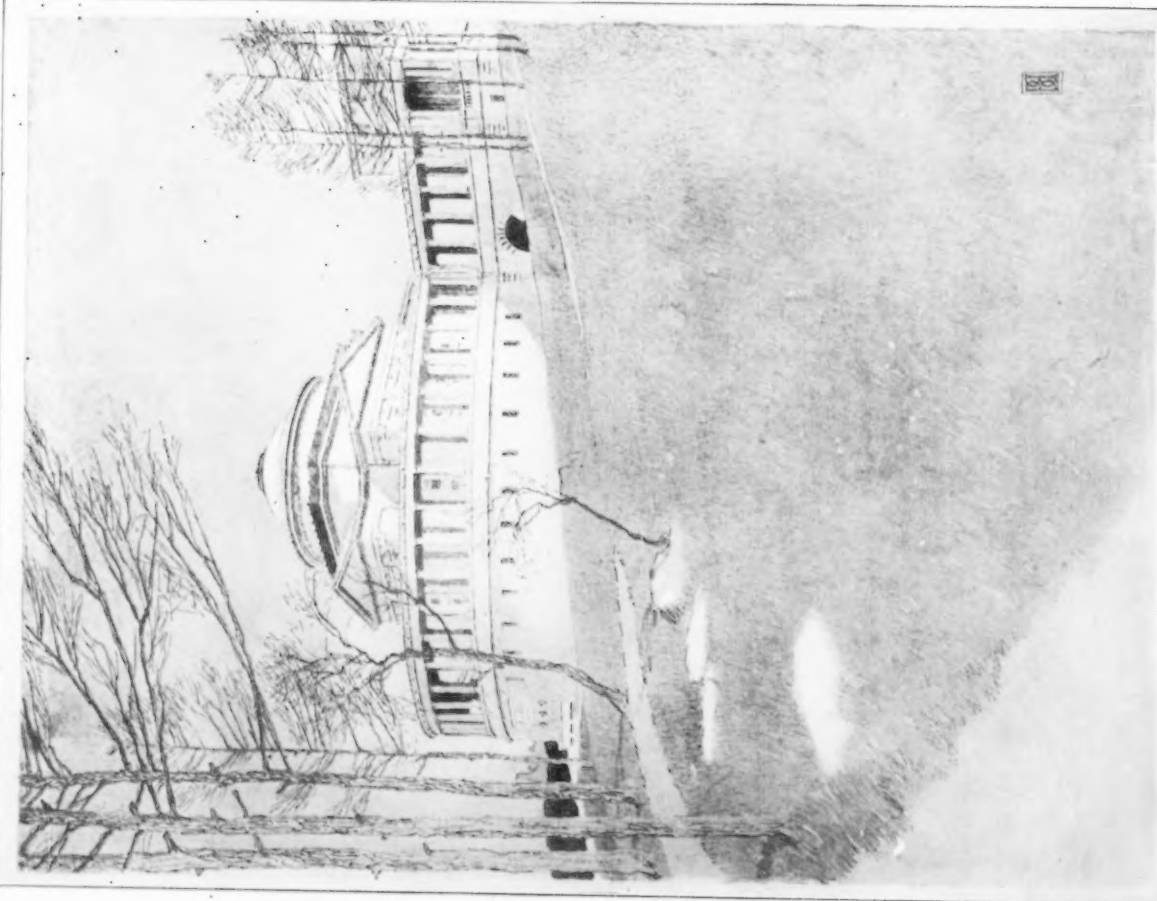
Drawing by, Birch Burdette Long.

THE HERALD BUILDING.





Drawing By Birch Burdette Long.  
UNIVERSITY OF VIRGINIA.

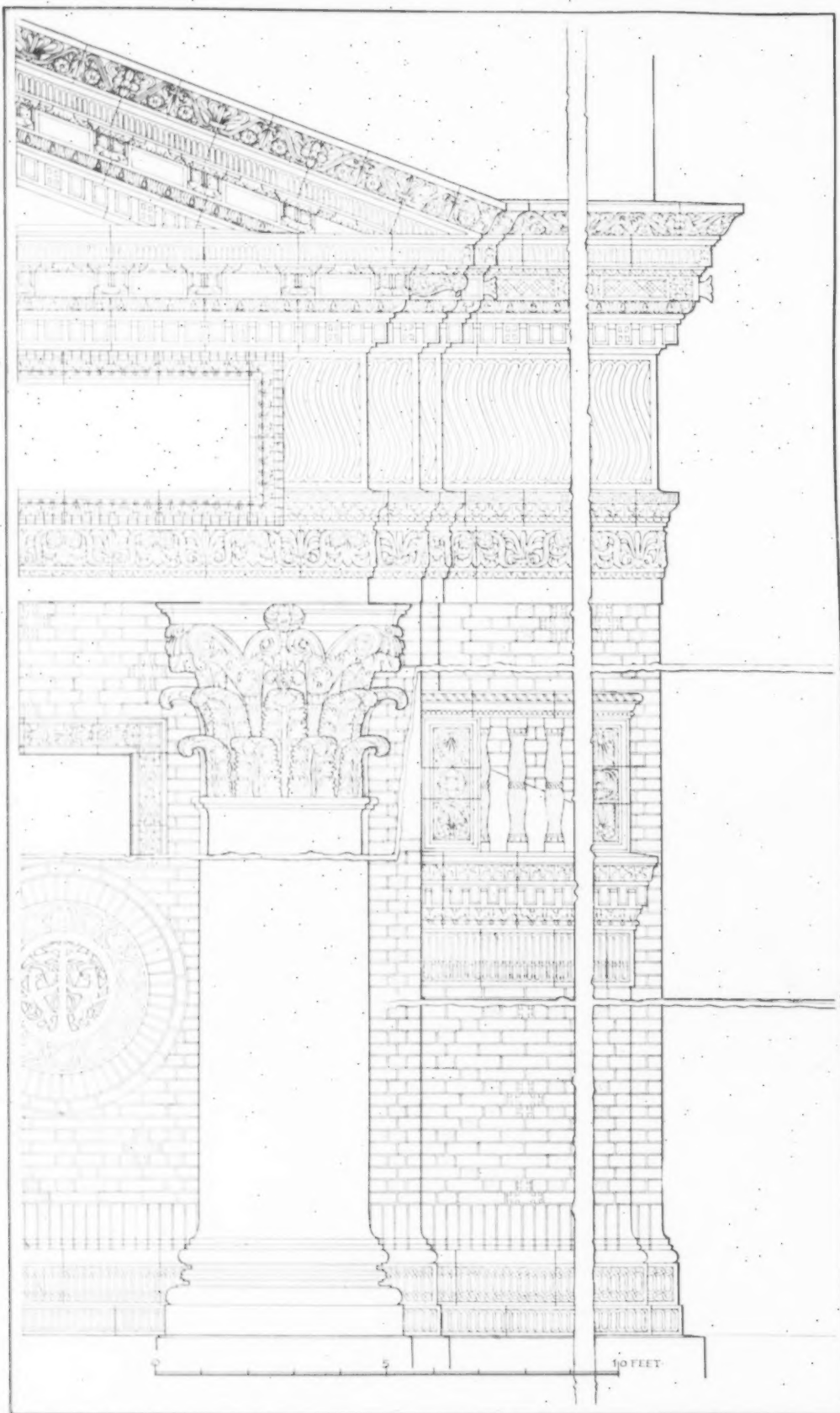


Drawing by Birch Burdette Long.  
NEW YORK UNIVERSITY.



Drawing by Birch Burdette Long.

THE WASHINGTON ARCH.



DETAIL OF MAIN ORDER, MADISON SQUARE PRESBYTERIAN CHURCH, PHILIPP MERZ, DEL.



## The Columbia University Chapel.

HOWELLS AND STOKES, ARCHITECTS.

BY WILLIAM H. GOODYEAR.

THERE are some matters of fact relating to church architecture which become dull commonplaces when published in an architectural journal, so much so that one almost hesitates to mention them in such a publication. But these same commonplaces are far from familiar to the non-specialist public; even to a very intelligent portion of it. And it is to this intelligent public that the architect must look for encouragement when he has done an unusually good thing. It is from this public that his patrons are drawn. It is on this public that his existence as an artist and his daily bread as a business man depend. With the kind permission of THE BRICKBUILDER, I shall therefore assume that this article may come to the notice of various persons who are interested in the new Chapel of Columbia University, without being specialists or experts in architecture or in architectural criticism. I shall assume that the photographs and drawings to be published with this

Commonplace No. 1: The important Romanesque and Gothic Cathedrals of mediæval times were almost universally designed as vaulted buildings, and the external characteristics of the mediæval Gothic style, especially, are only to be explained by reference to this fact.

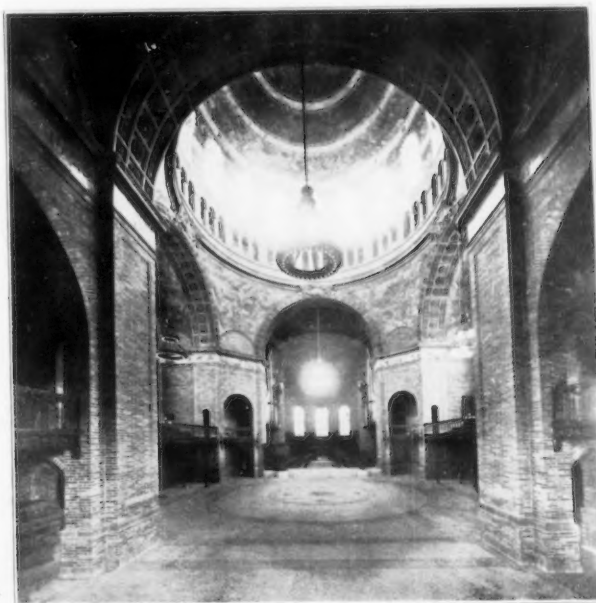
Commonplace No. 2: In modern architecture the practice of vaulting churches was not revived at the time when the mediæval styles were revived as regards the external traits which originally presupposed a vaulting practice. The exterior traits of ancient Gothic were revived as far back as 1825, and a continually increasing number of churches after that date copied these traits, but did not copy the vaulting practice which explained these traits and made them necessary. Forty years ago there was not a single vaulted church in the United States and in much more recent years the number of vaulted churches has been so extremely limited that a



FROM THE ROOF OF THE LIBRARY.

text will convey all desired information to the expert, and I shall assume that the text itself, which is scarcely needed for their advice or instruction, may still be of service to the cause of good architecture; provided that it comes to the notice of several distinctly important classes of laymen, viz.: first, those who are interested in Columbia University; second, those who are specially interested in the new Chapel of the University; and third, those intelligent persons who are interested in a good thing for its own sake, in whatever field or department of human activity that good thing may happen to be found.

This much by way of preface to the following commonplaces:



VIEW FROM MAIN ENTRANCE.

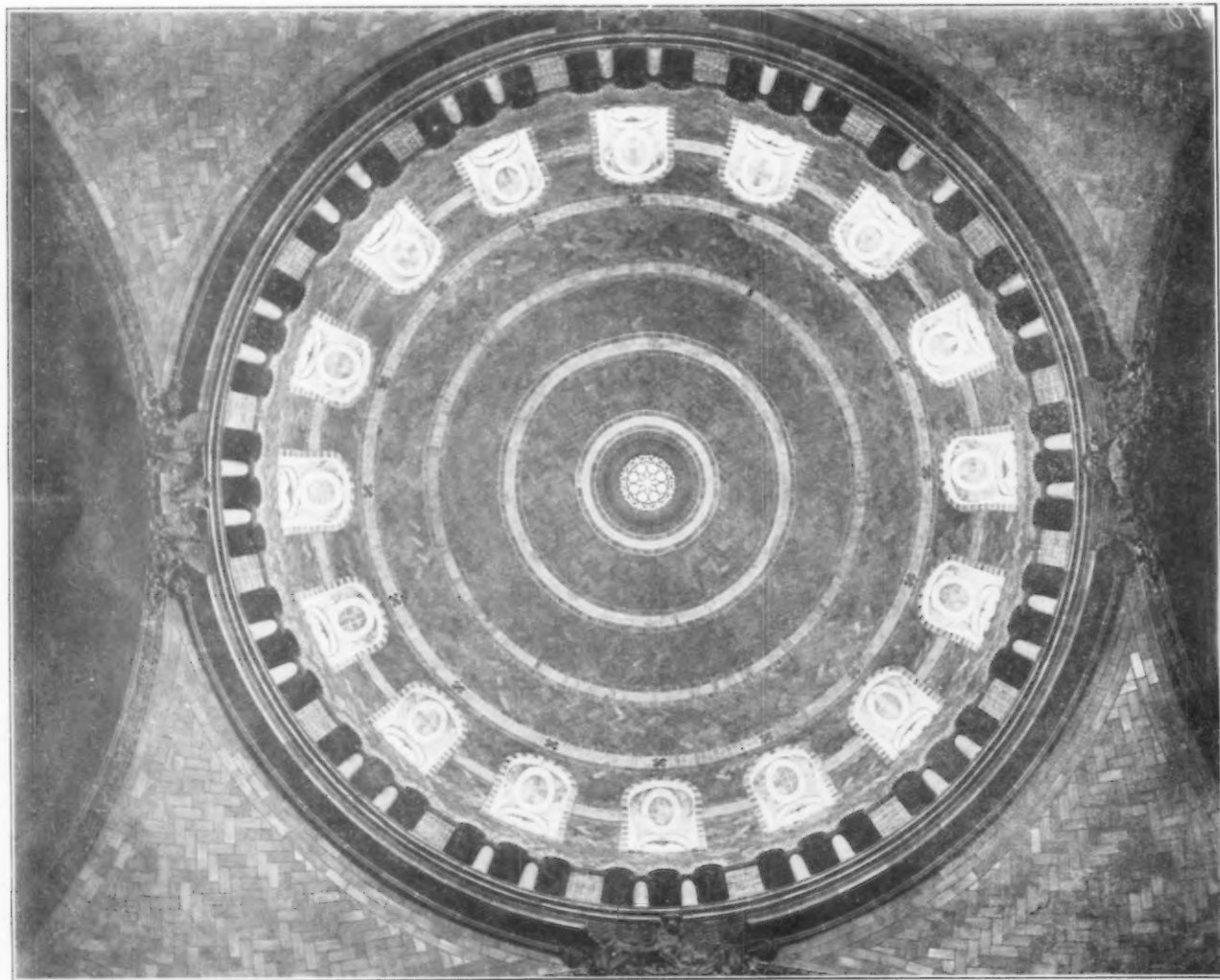
list of them would still derive an important fraction of its examples from churches that are as yet unfinished.

Commonplace No. 3: Although vaultings have been rarely used in modern practice, they have been constantly imitated by shams in plaster or cement, so much so that the presumably intelligent public is in the habit of accepting the sham as a rational and wholly unobjectionable performance. The intelligent public has lost track of the idea that the sham once had a constructive original which has been constantly copied in form during the past eighty years, but which has very rarely been copied in fact.

Commonplace No. 4 is a notable commonplace to THE BRICKBUILDER, but I fear that a considerable portion of

the intelligent but non-specialist public may still be ignorant of the remarkable history of the Guastavino system of vaulting and dome construction. In 1881, Mr. R. Guastavino came to America from Barcelona in Spain, where he had revived, especially in the construction of fireproof factories, an ancient method of Saracenic and Byzantine dome and vaulting construction, which had been practised at a still earlier date by the Persians and by the Assyrians.\* This system is called by Mr. Guastavino the "Cohesive System," as distinct from the "Gravity" system, which opposes to the thrust of the

units of construction, is absolutely and entirely eliminated. The success of the Guastavino system in the United States has been wholly due, in the first instance, to its wholly practical availability, and especially to its economically practical availability, for fireproof construction in utilitarian buildings, just as in the neighborhood of Barcelona it had been widely employed for economical reasons in the construction of fireproof factories by Mr. Guastavino. Consequently the Guastavino vaults and domes have been, up to very recent date, almost universally used in association with iron and steel beams and



LOOKING UP INTO DOME.

keystone arch a sufficient, and, consequently, a very substantial and very expensive resistance. In the Cohesive System very thin, flat tiles are laid in successive courses over a light centering, and with broken joints, in thin layers of Portland Cement. The very rapid setting of the cement binds the construction into a solid mass, in which the force of thrust is very remarkably minimized, and in which the tendency of the keystone arch vaulting, or keystone dome system, to disintegrate into its original

\* It is certain that a cohesive system was employed by the Assyrians, but I do not assert that any intimate knowledge of their methods is now extant.

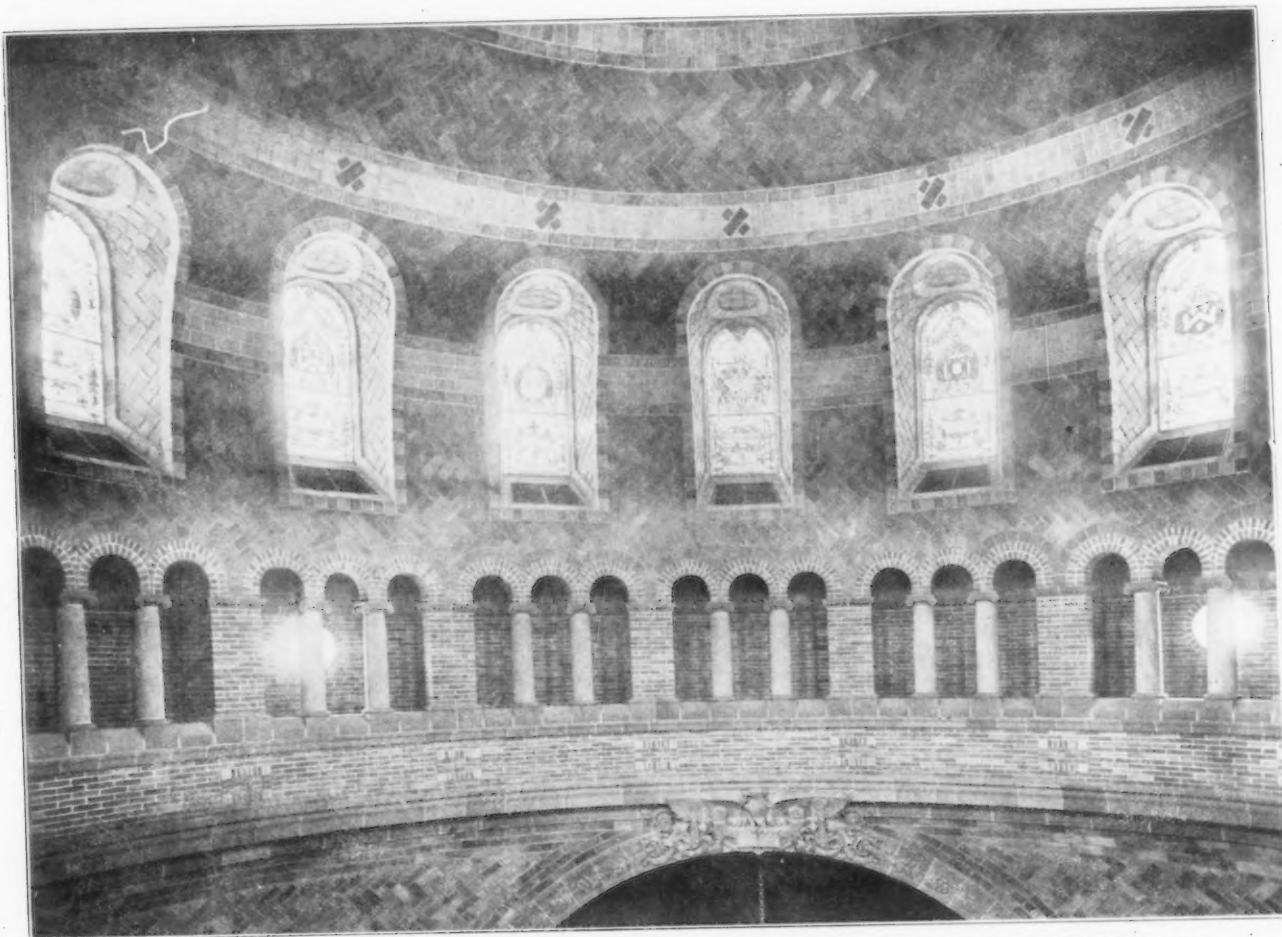
hands, according to the accepted methods of American fireproof construction in brick or terra-cotta.

Let us now assume that an architectural firm is desirous of reverting in church construction to the vaulting and dome system of the great historic periods, as a matter of fact and not as a matter of sham, and that, as contrasted with the enormous expense and great engineering difficulties (for present practice) of the "gravity" system of the Middle Ages, it is able to construct fireproof and artistically beautiful tile vaultings and domes, at about one-half the expense of a timber ceiling and timber roof construction.

It would be inevitable, under such conditions, that the forces of good taste and of progress in ecclesiastical architecture should join hands with some such type of construction as the Guastavino system of cohesive domes and vaultings of tile and Portland Cement, eliminating from the design the use of metal beams, or rings, and using self-sustaining vaults and domes as they were originally built in ancient church construction.

We are thus able to rise above the plane of commonplace in calling attention to this artistically beautiful church, which is vaulted and domed in harmony with mediæval practice, as regards the fact that the vaults and domes are self-sustaining, and which is also fireproof,

thrust and resistance in a problem of construction to which he is wholly unaccustomed and with which he is tolerably certain not to have any artistic sympathy. For though the problem is one of mechanical construction, it is only the artist who can sympathize with the wish to meet the problem without the use of metal. Conditions have not changed in this particular since Mr. Guastavino wrote, in 1893: "Suppose an architect intends to build a structure with a combination of domes, as in either the Cathedrals of Santa Sophia, in Constantinople, or Zamora, in Spain, and sends plans of it to the Building Department for approval in one of our large cities. He will find it a most difficult matter to obtain a permit to build this



INTERIOR OF DOME AT LEVEL OF UPPER GALLERY, SHOWING WINDOWS BY MAITLAND ARMSTRONG.

as a mediæval cathedral in Europe almost invariably was not, on account of its timber roof above the vaulting.

The dome of the Columbia University Chapel has a diameter of forty-eight feet and a height of ninety-one feet. This Chapel would appear to be one of the very earliest completed churches in the United States (if not the first) which is vaulted throughout the entire construction and in which a truly constructive central dome and its supporting arches are designed to be, and actually are, self-sustaining. Even in this dome three steel bands have been inserted, but only to comply with the regulations of the New York Building Department and not because they are needed. It is easier for an inspector to order in the metal bands than to figure out the forces of

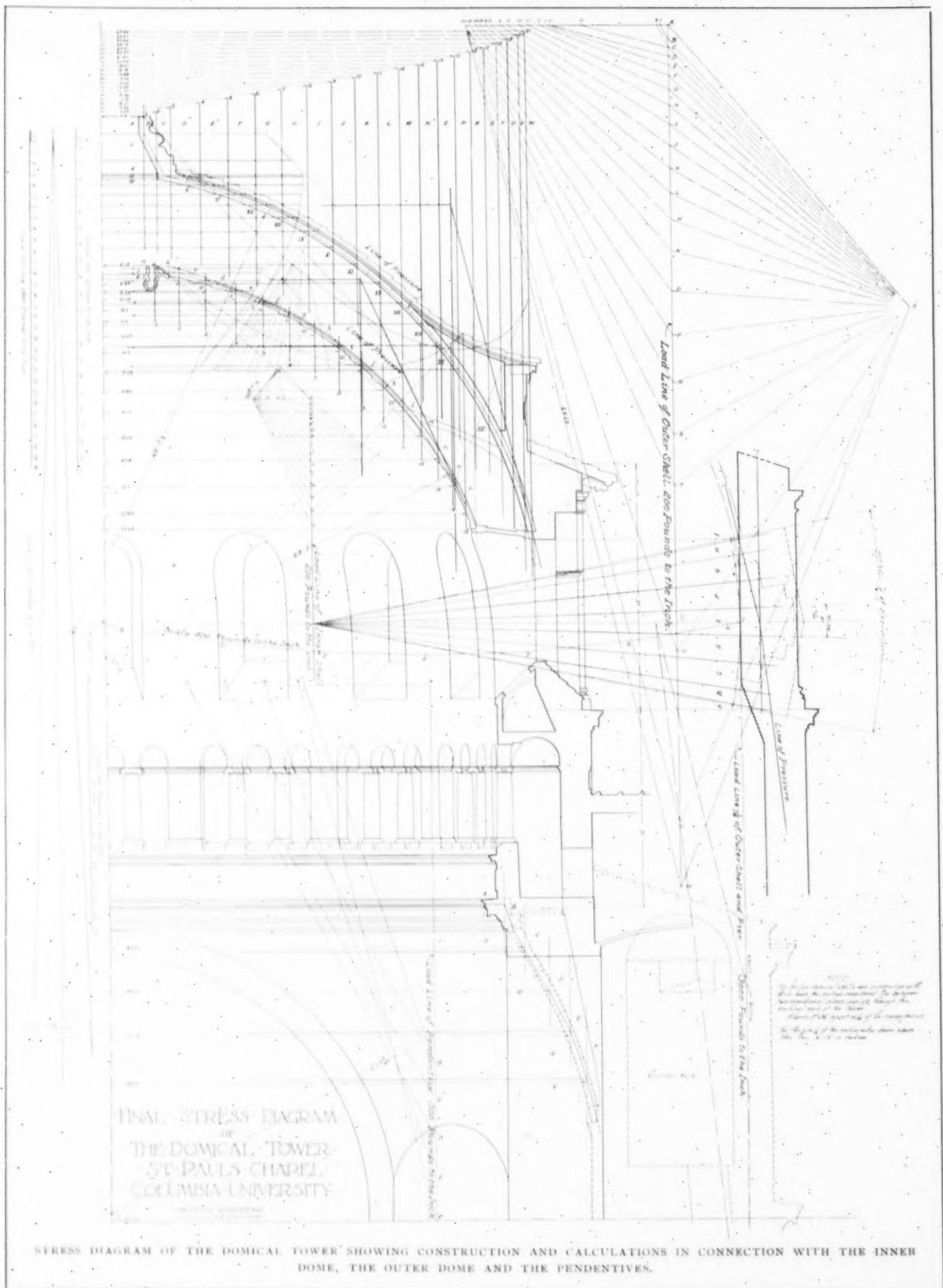
structure and in consequence he will have to make an imitation of the outside and inside artistic lines by a false construction."\*

The alternative chosen in this case was, however, to figure out the needed amount of supports in brick masonry and to build them, and then to obey the rules of the Building Department, which were wholly irrational in the given instance.

In view of such building regulations it would be well that the patrons of architecture, as well as architects themselves, should understand both the conscientious standpoint and the artistic superiority of the designer

\* Essay on the Theory and History of Cohesive Construction. Ticknor and Company, 1893, p. 95.







ORNAMENT IN TERRA  
COTTA ON TRANSEPT  
WINDOW MULLIONS.

who wishes to be true to the conditions of the material in which he is visibly and apparently working. It would be well that the public should understand that the public is the real obstacle to the triumph of constructive truth in architectural design, for what the patron does not ask or desire the architect can rarely furnish.

It is to be hoped, therefore, that the architectural profession will serve its own best interests by approving this effort to build vaulting and domes in which metal is not needed as regards design (unless frankly exhibited as in the supports of the transept galleries).

From another but closely related point of view, this same chapel marks a departure in church architecture in America, in the sense that the entire interior color scheme and decorative treatment are obtained solely and wholly in the constructive materials. Here again a note has been struck which will meet the sympathetic approval of every true artist in the United States.

The architects have relied for the color effect of their walls on the over-burned brick of their actual construction. To the masons themselves was left the task of obtaining the broken effect in color which is always superior to a uniform shade. They were encouraged to select in a partly hap-hazard and partly calculated

be appreciated. It is much assisted by the employment of a deep purple color in the pointing, and this color in the cement was the result of careful experiment. To the artist the knowledge that the color effect of the chapel interior is obtained in the actually constructive material can certainly not be indifferent. Neither can this knowledge be indifferent to the practical economist, and such an economist is frequently, as here, the best of all artists.

Although it is the ambition of the architects not to obscure or disguise these surfaces by subsequent overlay of fresco or mosaic, it is far from their purpose or mine to contend that a brick interior should never be thus decorated. In the case of a chapel built for a University, generosity in the line of such subsequent decoration is

sometimes easily awakened, and it is highly natural and proper that unusually large sums should be spent on the interior adornment of such a building. For this very reason, however, it is to be hoped that this brick interior effect may not be effaced. What our country needs is good ex-



ONE OF A PAIR OF BRONZE  
LAMP STANDARDS PLACED  
AT EITHER SIDE OF MAIN  
ENTRANCE.



GALLERY BELOW DOME.



STAIRWAY TO LOWER GALLERY.



STAIRWAY TO DOME.

method such a variety of natural tones of the brick as would obtain the desirable results of broken color. In the rose-colored tiles of the dome and of the pendentives and vaultings the color effects obtained by the predetermined irregular association of the lighter and darker tints of rose are beautiful. The effect must be seen to

ample in high places and in influential centers. Let it be remembered that for one church that can be decorated in fresco or mosaic there must be a thousand that can never rise above a plaster overlay that ought not to be put on. What is needed now is an example showing these thousand churches that they can save the

expense of this plaster and of a probably tawdry color scheme and at the same time obtain an infinitely better result in color without it. Let the Columbia University Chapel then remain as it is in this particular: Let it be in other matters an example of the generosity of its donors, but let it be in this matter "a light in the wilderness" to those poorer churches which can never afford fresco and which ought not to waste money on plaster and on bad art. It is eminently the province of a University to show that economy may be a means to good art, and in this especial particular the natural brick and tile surface is the means to a much better art than has heretofore been found, as a rule, in the church interiors of the modern world.

Terra cotta relief ornament has been used in the interior for the framing of the main door, for the base molding, and in very rich and beautiful detail, which is reminiscent of the Della Robbia designs, for the archivolts of the great arches supporting the dome. Here, again, the ornamental details are not applied or attached, but are constructive ornament, not only in the sense that they emphasize constructive lines but in the sense that they are physically portions of the constructive material of the arches. The symbols of the four

in the soffits of the great arches, where is found the use of the pilgrim's shell, the fig and its leaf, the vine, the poppy, the cross and the pax. The fruit and leaf work may be closely traced to models of Lucca della Robbia and Mino da Fiesole. The archaic vine motive forming the base mold of the interior was inspired by a piece of chased metal in the Spitzer Collection.

In the furnishings and fittings of the Chapel there has been much reserve. They are characterized by the sobriety and simplicity which have led the architects to emphasize the constructive materials and constructive forms of their building. On the other hand no expense, and, what is better still, no conscientious effort, has been spared to obtain perfection of material and workmanship in these details. The carving and Tarsia work of the pulpit, reading desk, choir stalls and organ cases are the work of Coppede of Florence, one of the best known wood carvers of Italy, as the result of a competition organized by the architects in Italy, in which the three leading wood carvers of that country, respectively active in Siena, Rome and Florence, took part. The style of the detail in the choir stalls and pulpit has that combination of simplicity, vigor, richness and reserve which repre-



SHOWING THE CONSTRUCTION OF THE OUTER DOME.



BONDING THE TERRA COTTA BLOCKS WITH THE BRICKWORK OF THE GREAT ARCHES.

Evangelists in terra cotta are placed in powerful designs at the crowning of these four arches and unite them with the great ring of the dome.

The only break in the brick and tile surface of the interior is a frieze of Benou marble under the light cornice which marks the springing of the arches. This frieze is carried entirely around the church and harmonizes in its delicate coloring with the brick and terra cotta of the interior.

Most of the ornament in the chapel, both inside and out, is symbolic, relating to scriptural subjects, as, for instance, the different designs of rosettes and other panels



BUILDING THE BRICK PENDENTIVES.

sents the best period of Italian wood carving, about 1500. The motives in the wainscoting of the choir and in the choir stalls are inspired by the woodwork in the sacristy of Santa Croce in Florence. The design of the organ cases deserves special praise on account of its structural fitness and because of the unusual purity of its composition.

The forms of the bronze chandeliers are carefully adapted to the modern requirements of electric lighting, while the bronze open work rail of the galleries reveals the successful effort to preserve a general unobtrusiveness and lightness of effect in this otherwise generally disastrous feature of a modern church.



Even the lock and the key of the main door are works of art, but here the antiquarian collector has taken the place of the designer. This particular tribute to old Italian work is graceful both in thought and in fact.

The pavement of the chapel again reveals the taste which does not forget details; for its large and simple patterns are defined by inlaid bands of mosaic, consisting of fragments of old porphyry and serpentine also brought from Italy.

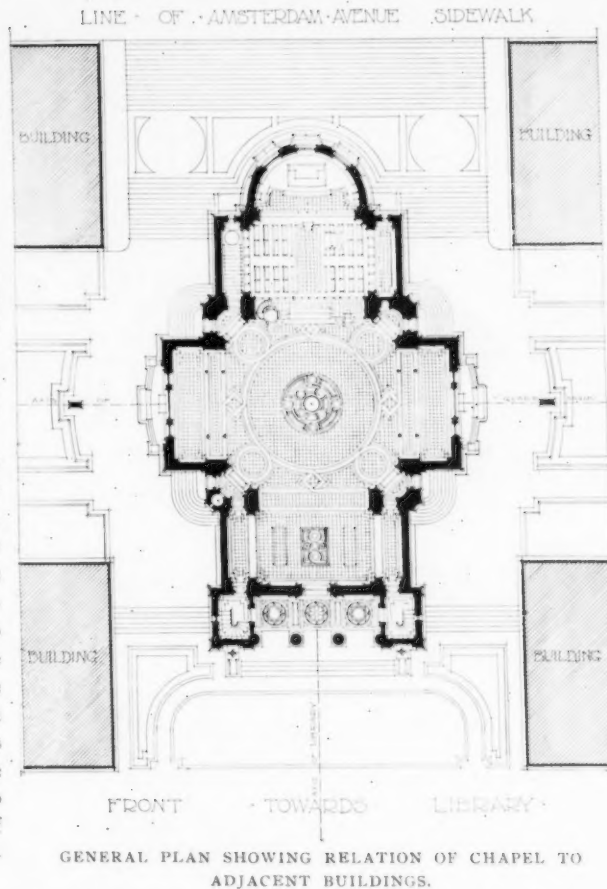
Not the least important feature of this chapel interior is the absence of pews. Exactly why no church interior is wholly satisfactory which is furnished with these appendages may not be quite easy to put in words. The fact is there and patent to all who choose to give a thought to it. Even the recent Catholic churches in northern countries have rarely had the good taste to revive this first condition of the beauty of an old continental cathedral.

The windows of the church include three in the apse, which are filled with stained glass by John Lafarge. A single subject, St. Paul preaching at Athens, fills all three lights. Few modern stained glass windows can have found so beautiful a setting and contrast as these obtain from the color of the brick walls around them. The sixteen windows in the upper part of the dome, by Maitland Armstrong, are memorials of distinguished alumni of the university, many of them historic personages.

"The present transept windows are temporary, and it is hoped that the spaces will be filled by memorial windows. It has been suggested that the window in the north transept shall represent the great teachers of the New Testament and shall be a memorial of the Rev. Dr. Samuel Johnson, the first president of Kings College (1754-1763), and that the window in the south transept shall represent the great teachers of the Old Testament and shall be a memorial of President Barnard (1864-1889)."

So far we have allowed the plans, photographs and drawings to describe the Chapel itself, and we are tempted to adhere to this method.

\* Quoted from a printed account of the inscriptions and windows in the Chapel.



The exterior materials of brick and Indiana limestone, and the height of the lower exterior cornice, were prescribed by the regulations pertaining to the other university buildings. These regulations also required the building to be "classic," i. e., not to use mediæval form or details. The location, orientation and even the dimensions of the Chapel were very rigidly fixed by the close neighborhood of four surrounding buildings, either already finished or soon to be constructed.

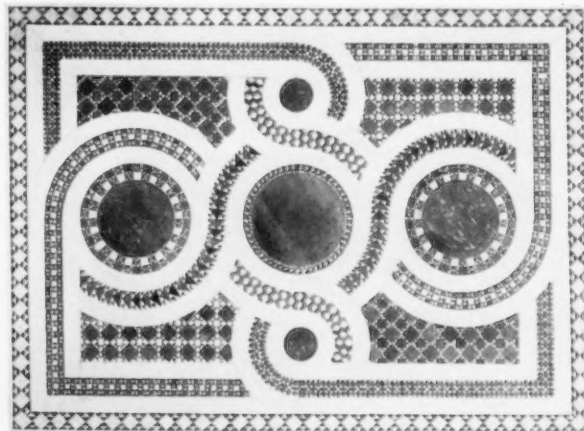
Hence we explain a shallowness in the transepts which, for exterior effect, would have gained by greater depth. These transepts are only twenty feet distant from adjacent buildings, and this amount of distance was prescribed. A seating capacity of one thousand was prescribed. The interior length is one hundred and twenty feet, the greatest width is seventy-six feet. The interior diameter of the dome is forty-eight feet and its interior height is ninety-one feet, as already mentioned.

The dome supports a simple terra cotta lantern, and its weight, of some eight tons, was an important element in the problem of thrust. In order to reduce the weight of the lantern the voids in the terra cotta were filled with cement, in which layers of hollow glass balls were embedded. This ingenious device reduced the weight by nearly a ton, without appreciably diminishing the strength.

As shown by the section, the dome consists of a double shell, in order to avoid dampness and the condensation of moisture. The shells are twenty-seven inches apart at

the base, increasing to six feet above, by a rise in pitch of the exterior dome. The inner shell has a thickness of from three and one-half to two and one-fourth inches, the lower third laid in three courses, with two courses higher up. The outer shell has a thickness of six and one-half inches below, decreasing to a thickness of five inches above, laid in five courses below and four above.

The total weight of the entire dome construction down to the gallery floor is 1043½ tons. Of this weight only 171½ tons bears on the interior pendentives. This is



OBLONG PANEL OF COSMATESQUE WORK FROM PAVEMENT OF NAVE.



EVANGELIST OVER EAST ARCH (TERRA COTTA).

the weight of the inner shell and its supporting members. It is an interesting feature of the Guastavino system that this inner shell weighs only 68½ tons. The weight of the outer dome and supporting walls down to the gallery floor is 87½ tons. This weight is carried by exterior independent pendentives (see diagonal section). The weight of the outer shell alone is only 10½ tons and the weight of the outer shell with its roof and lantern is 26½ tons.

The construction of the walls is also in two shells, in order to avoid interior dampness. The architects have furnished the following technical account of the walls.

"Owing to the unusually exposed position of the Columbia buildings, it was felt that every precaution should be taken which would tend to protect the interior of the chapel from leaks and dampness."

"The usual method of applying an envelope of waterproof material to the inner surface of the brickwork was rejected:

"1. Because the life of all such waterproofing materials is limited, the principal ingredients being essential oils which evaporate in time;

"2. Because the interior of the church was to be finished entirely in brick, so that the waterproof envelope would have to have been overlaid with the veneer of interior brick, which could not have been bonded in any satisfactory way to the masonry.

"As no satisfactory or permanent system of exterior surface waterproofing has yet been devised, a system of hollow walls seemed the only permanent solution possible, and this, in modified form, was finally adopted."

"The exterior wall, which averaged twenty inches in thickness, was built with vertical toothed ribs spaced about four feet apart. The entire interior surface, including the toothed ribs, was then coated to a thickness of about five-eighths inches with chemically waterproofed hydrolithic cement. The interior curtain wall of finish brick, four inches in thickness, having toothed reinforcing ribs corresponding to those in the exterior wall, was then built. This left a series of hollow



EVANGELIST OVER SOUTH ARCH (TERRA COTTA).

chases about four feet wide and four inches deep extending from the base molding three feet above the floor to the main cornice. When the latter was set, a course of bricks corresponding to the panels and immediately below the cornice was left out, and through the apertures thus formed the interior spaces of all bearing walls, where great strength and solidity were important, were filled up flush with the top with a very rich liquid grout. In order to resist the hydrostatic pressure of the liquid cement before setting, the curtain wall had been anchored to the exterior wall by copper clamps placed at eighteen-inch intervals. Experiments on test sections showed that the adhesion of the grout to the adjacent surfaces of the exterior and interior wall was so perfect that, after having set for forty-eight days, the experimental section, when broken up with a sledge hammer, showed no cleavage between the adjacent surfaces. In this way a monolithic wall was produced, having in its interior a continuous, unpierced, permanent, waterproof layer."

"In certain portions of the chapel, notably back of the organ chambers, where even slight condensation would have been objectionable, and where the height of the walls was not sufficient to call for increased strength, the grout fill was omitted. The interior air spaces are drained and ventilated."

The cost of the structure complete has been about \$260,000, exclusive of the stained glass, choir wood carvings and organ.

The most interesting item of cost, from an economic point of view, is that of about \$17,500 for dome and vaultings, including the substructure vaultings, and the stairways. Thus this cost is only six or seven per cent of the cost of the structure. It is difficult to see how architects of future churches can resist the temptation to indulge in so reasonable a luxury as a fireproof roof and ceiling which enables them also to revive the constructive forms of mediæval or Renaissance building. The exterior of the chapel is a logical and unpretentious development of the interior construction, with the addition of a fine



A PILASTER  
IN CHOIR,  
CARVED  
BY  
MARIANO  
COPPEDE,  
FLORENCE.

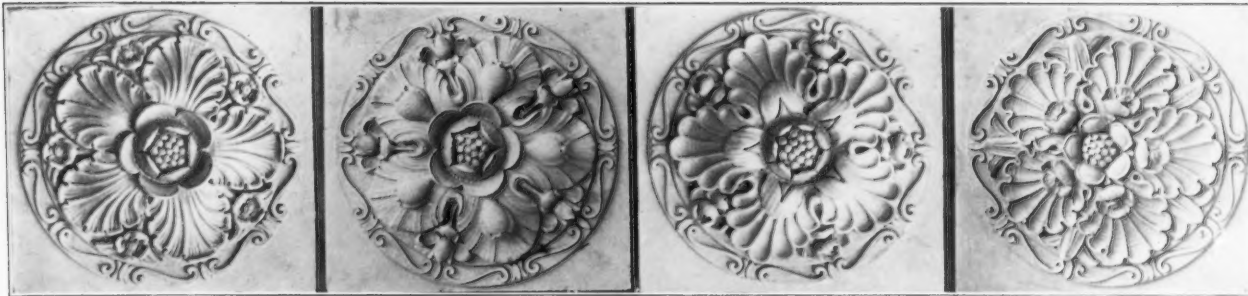


EVANGELIST OVER NORTH ARCH (TERRA COTTA).



EVANGELIST OVER WEST ARCH (TERRA COTTA).





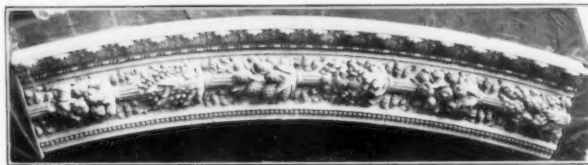
ROSETTES IN SOFFITS OF GREAT ARCHES (TERRA COTTA).

portico. The richest bit of exterior ornament is the elaborate leaf carving on the limestone frame of the main entrance. The finest exterior effect is obtained from Amsterdam Avenue looking toward the choir, and here the building is slightly and agreeably reminiscent of the related view of Santa Maria delle Grazie in Milan.

The stress diagram (see illustration) computing the thrusts of the dome is the work of Nelson Goodyear, consulting engineer for the architects. In justice both to Mr. Goodyear and to the Guastavino firm, it should be stated that this diagram represents the forces of thrust according to the gravity system and does not include the considerable additional element of safety which inheres in the cohesive system. This appears to be a very sensible method of enlarging the margin of safety for the experimental stage in the construction of self-sustaining domes. In spite of this wide margin of safety, it will be noticed that the piers supporting the great arches are

not especially massive and that they are pierced below by openings and lightened by niches.

For those familiar with graphic diagrams, the cohesive strains will be apparent in the stress diagram, and the cohesive resistance has been carefully computed, and is definitely known, although it is reckoned as a margin of safety.



DETAIL IN TERRA COTTA.

Let us finally not forget the university to which the chapel belongs and the religious service to which it is dedicated. No water can rise above its source. No architect can rise very far above the character of his clients. If this chapel de-

serves praise as an honest bit of American art, surely the donors and the trustees of Columbia University come in for their share.

As a religious building, let us hope that the students of Columbia University will learn religion from it, as well as in it. Nor have we any doubt that the serious mind may profit in that way.



VIEW FROM GALLERY.



THE ORGAN.



## Editorial Comment and Selected Miscellany

### WITH SOCIETIES AND CLUBS.

THE Boston Architectural Club held its Annual Exhibition at the Boston Public Library, November 5 to 24, inclusive. Considerable new and interesting work was exhibited, a very large percentage of it being by Boston firms. Although the catalog was of the usual type, it was well gotten up.

The Thirteenth Annual Exhibition of the T Square Club, Philadelphia, was held under the auspices and in the galleries of the Pennsylvania Academy of the Fine Arts, December 1 to 30, inclusive.

The management endeavored to give to the Exhibition an educational character in the broadest sense of the term. They hoped to attract not only the profession, and those more intimately connected with it, but the



HOUSE AT WASHINGTON, D. C.  
Wood, Penn & Penning, Architects.  
Roofed by Edwin Bennett's Roofing Tile Co.

public generally, to whom the subject matter of an exhibition is perhaps not directly attractive. They were able to obtain exhibits bearing on matters of much interest to the public in many different ways. To still further advance the cause, the Academy and the T Square Club asked the National Society of Mural Painters, the National Sculpture Society and the American Society of Landscape Architects to associate themselves in the Exhibition, with a view to showing the executed work of the allied arts in connection with the drawings of the architects.

The exhibition came at a time peculiarly propitious in two ways: first, the great interest which has been aroused the country over in the movement for municipal improvements both in the way of the opening of great boulevards and the beautifying of these with monumental structures; second, because at this time of great prosperity, vast sums are being expended commercially and in the improvement of transient facilities and the housing of government and municipal offices.



ORCHESTRA HALL, CHICAGO.  
D. H. Burnham & Co., Architects.  
Fireproofed by National Fireproofing Co.

Very many drawings and photographs of some of the most interesting work being carried on throughout the country were exhibited. The collection included contributions from nearly all of the large cities and better known architectural firms. Particularly interesting were the drawings exhibited by a number of renowned French architects.

On the whole, the societies connected with this exhibition are to be congratulated upon the results obtained. It was an effort to make it possible for the public of our cities to be enlightened on many subjects which have only recently become of importance to us, and it is to be hoped that the public will take advantage of such opportunities to see what architects and artists are doing for the country.

The Twenty-Second Annual Exhibition of the Architectural League of New York will be held in the building of the American Fine Arts Society, 215 West 57th Street, from Saturday, February 3, to Saturday, February 23, inclusive.



REPRODUCTION OF DELLA ROBBIAS PANEL IN COLORS.  
F. Joseph Untersee, Architect.  
Excelsior Terra Cotta Co., Makers.

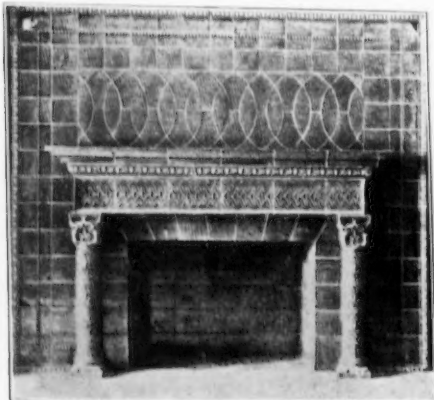


CARTOUCHE MADE BY NEW JERSEY TERRA COTTA CO.

The annual meeting of The Gargoyles of New York was held on Tuesday evening, December 18. A dinner at the Hof Brau Haus preceded the meeting. The object of this Club is the promotion of social intercourse and fellowship among its members, and the study of the Fine Arts for mutual benefit and improvement.

#### THE NEW MADISON SQUARE CHURCH

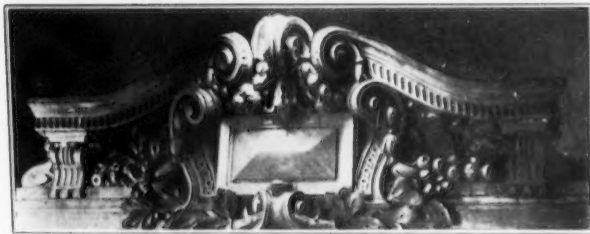
THE problem was to erect a creditable church building in a spot backed by a fifteen-story skyscraper, with the possibility of a similar building on one side and a six hundred foot tower across the street. This problem Mr. White not only overcame, but he also wrested artistic success from apparent defeat.



MANTEL EXECUTED IN DULL GREEN FAIENCE BY HARTFORD FAIENCE CO.

The annual dinner will be held on the evening of Friday, February 1, at 7 P. M.

The last days for the reception of exhibits are as follows: drawings and mural decorations, January 5; all other exhibits, January 23. Exhibits discharged, February 25.



DETAIL BY FRANK S. LOWE, ARCHITECT.  
South Amboy, Terra Cotta Co., Makers.

churches, and yet is not so lively as to offend. Cruciform in plan, with the arms of the cross projecting but slightly beyond the square mass, the structure maintains its dignity, owing to the dome and an impressive portico, the columns of which outweigh in scale anything in the immediate vicinity.

The church is built of a very delicate shade of buff brick and glazed terra cotta upon a base of white marble. In order to differentiate the edifice from its neighbors it was decided to use color more liberally than had been employed in other buildings hitherto erected in this country. The six columns of the portico, each thirty feet high, are of pale green granite. The capitals of the columns are Corinthian, the color



DETAIL FOR A CHURCH, WESLEY L. BLETHE, ARCHITECT.  
Conkling-Armstrong  
Terra Cotta Co., Makers.

scheme being blue, white and yellow. All other ornamental features reveal a delicate and appropriate use of the same shades and of green. As in many Syrian and Roman churches the dome is tiled, showing an alternating pattern of green and yellow, the green serving as a background. To sustain and enrich the effect the dome is surmounted by a golden lantern. Within as well as without manifest efforts have been made to escape from the somber atmos-



TENNESSEE TRUST BUILDING, MEMPHIS.  
Shaw & Pheil, Architects.  
Faced with Hydraulic-Press Brick Co.'s No. 501 Gray Brick.



SMALL DOME ON A COUNTY COURT HOUSE.

William Kaufman, Architect.

Terra Cotta made by The Northwestern Terra Cotta Co.

phere of the average church. The auditorium, with its wide vestibule and low galleries, is in no sense ornate. The prevailing colors, shading downward from the dome, will be in harmony with the exterior. The pews and all the woodwork are in Quaker oak, a soft, silvery gray wood. Just back of the pulpit there is a small window that is a gem in design and workmanship. It was a gift of the congregation to Dr. Parkhurst to commemorate the twenty-fifth anniversary of his term as pastor.

This church is undoubtedly the best modern example of the use of colored terra cotta in the exterior walls of a building, and demonstrates the possibilities that are inherent in this material. The delicate detail has been

effectively produced by perfect modeling and the use of quiet rich colors. The work was executed by the Perth Amboy Terra Cotta Company. The bricks used in the exterior walls are of special make. A pattern effect is obtained by the introduction of a Maltese cross in a certain number of the brick. They were furnished by Sayre & Fisher Company. The dome is covered with green and yellow tiles set in pattern which produce a rich and beautiful effect, harmonizing thoroughly with the general color scheme of the building. These tiles were furnished by the Ludowici-Celadon Company.



DETAIL BY JAMES R. WHITE, ARCHITECT.

Brick Terra Cotta and Tile Co. Makers.

## THE NEW COLUMBIA CHAPEL.

The architectural terra cotta,

used principally in the interior treatment of this chapel and which is so well described in the article by Professor Goodyear, was furnished by the Atlantic Terra Cotta Company. The brick throughout the building was furnished by Sayre & Fisher Company, and the roofing tile by the Ludowici-Celadon Company.

## IN GENERAL

Arthur G. Dole and Otto H. Wiegand, architects, have formed

a co-partnership: offices 127 Tri-State Building, Fort Wayne, Ind. Manufacturers' catalogues and samples solicited.



DETAIL BY PILCHER &amp; TACHAU, ARCHITECTS.

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The South Amboy Terra Cotta Co. will supply the architectural terra cotta which will be used in the following new buildings: St. Phillips Church, Bedford Park, Bronx, New York, Geo. H. Streeton, architect; Three Fire Houses, Brooklyn, Walter E. Parfitt, architect; Apartment Houses, Brooklyn, Frank S. Lowe, architect; Stuyvesant Theatre, New York, George Keister, architect; Church of the Comforter, New York, Bannister & Schell, architects; Church at Union Hill, New Jersey, George D. Lugosch, architect.

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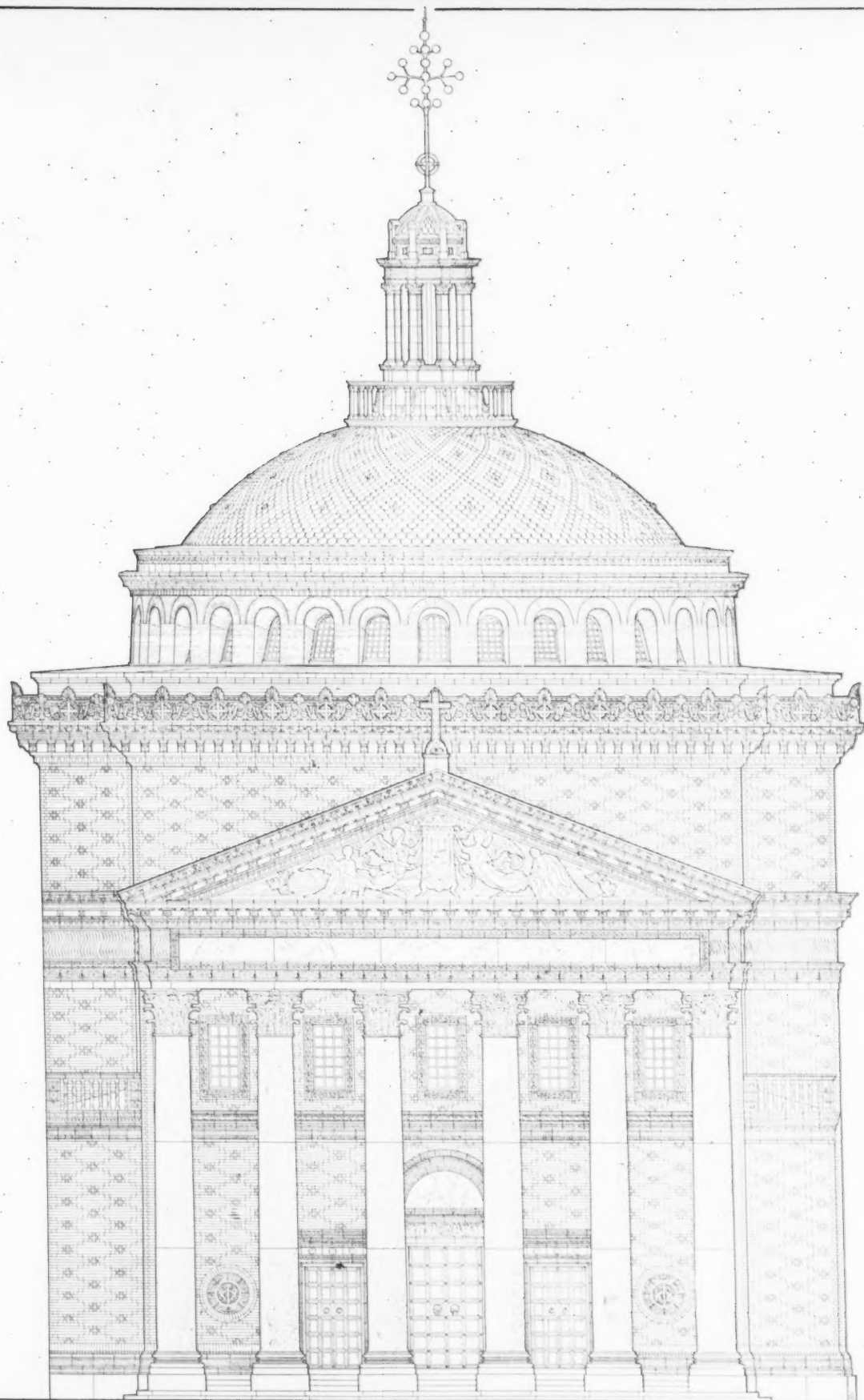
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1115 CITIZENS BUILDING

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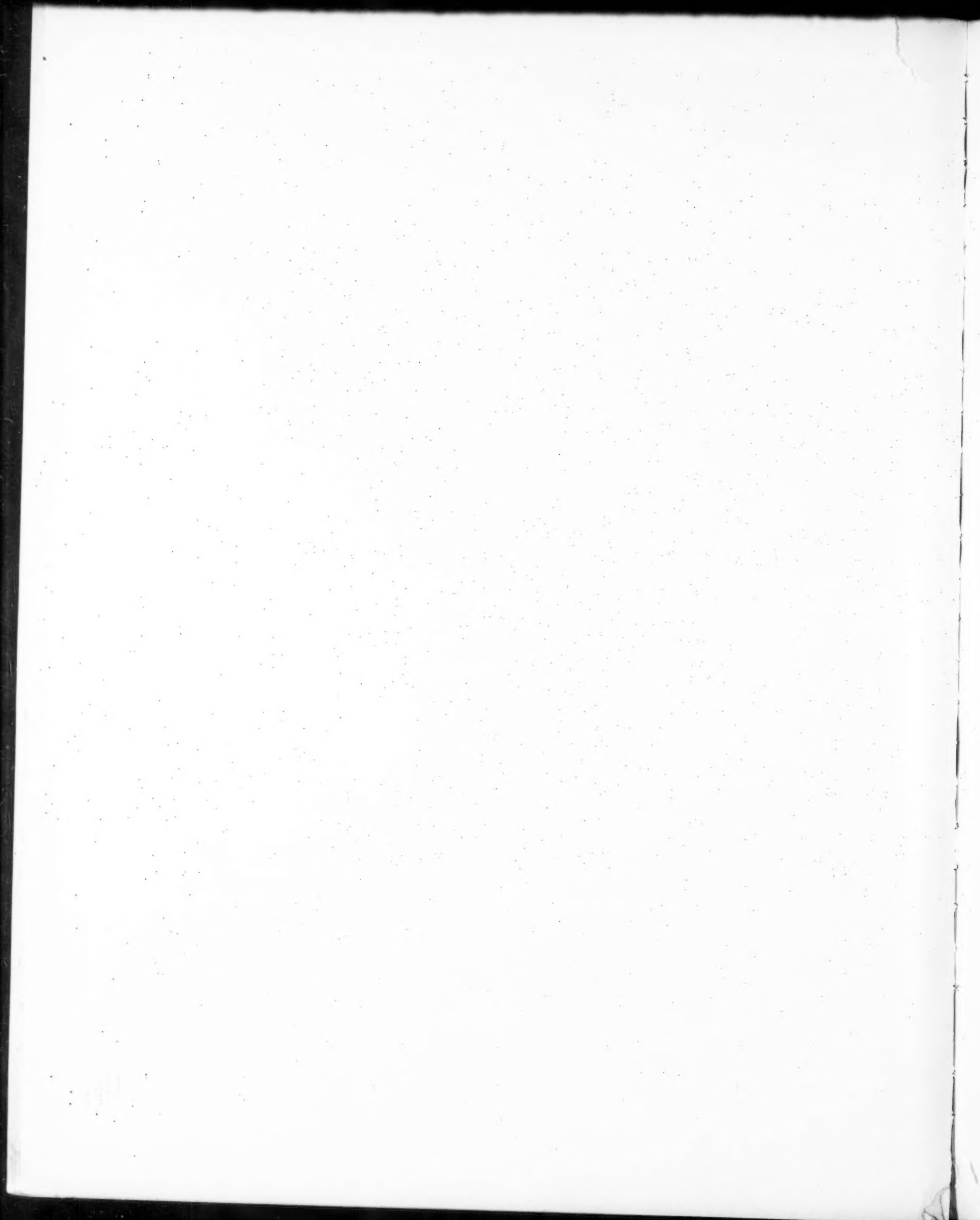
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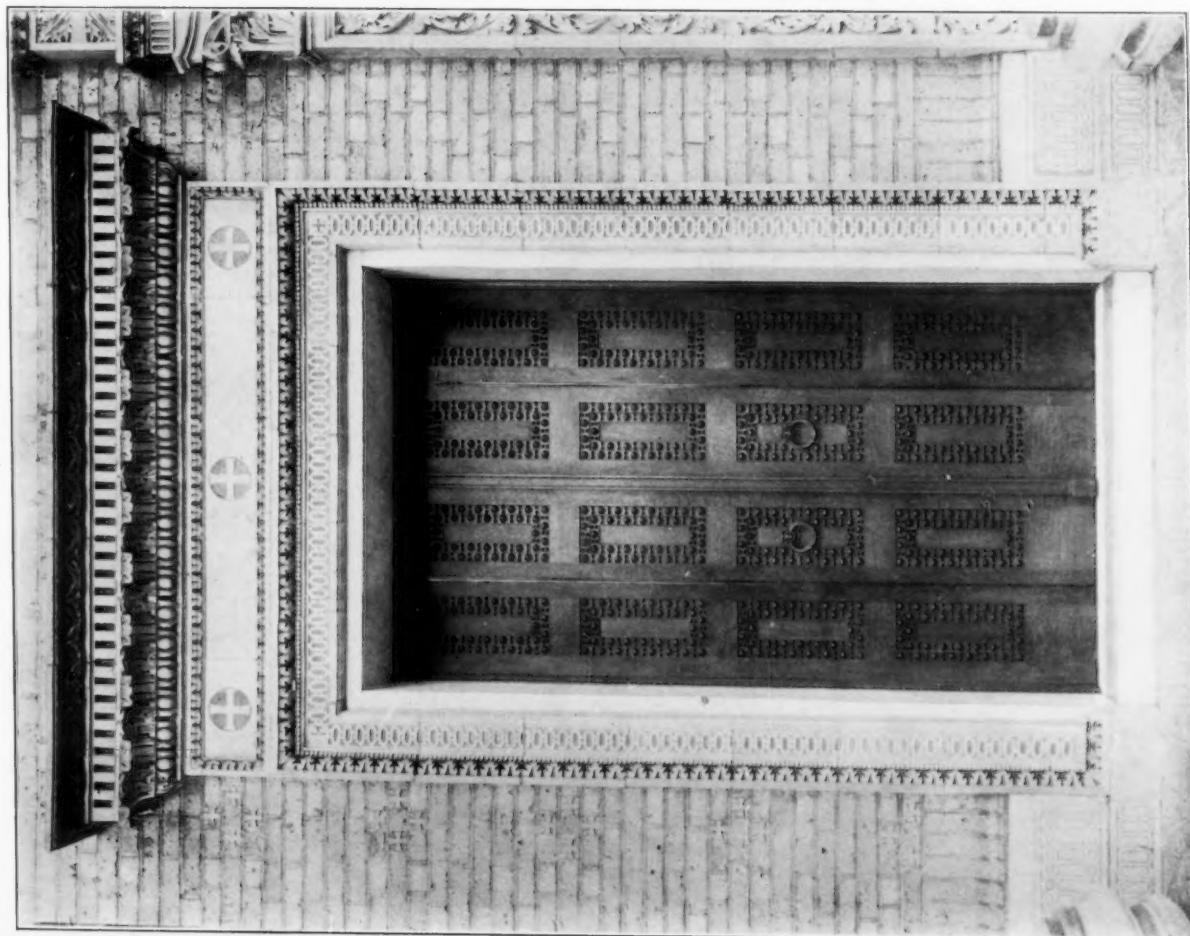
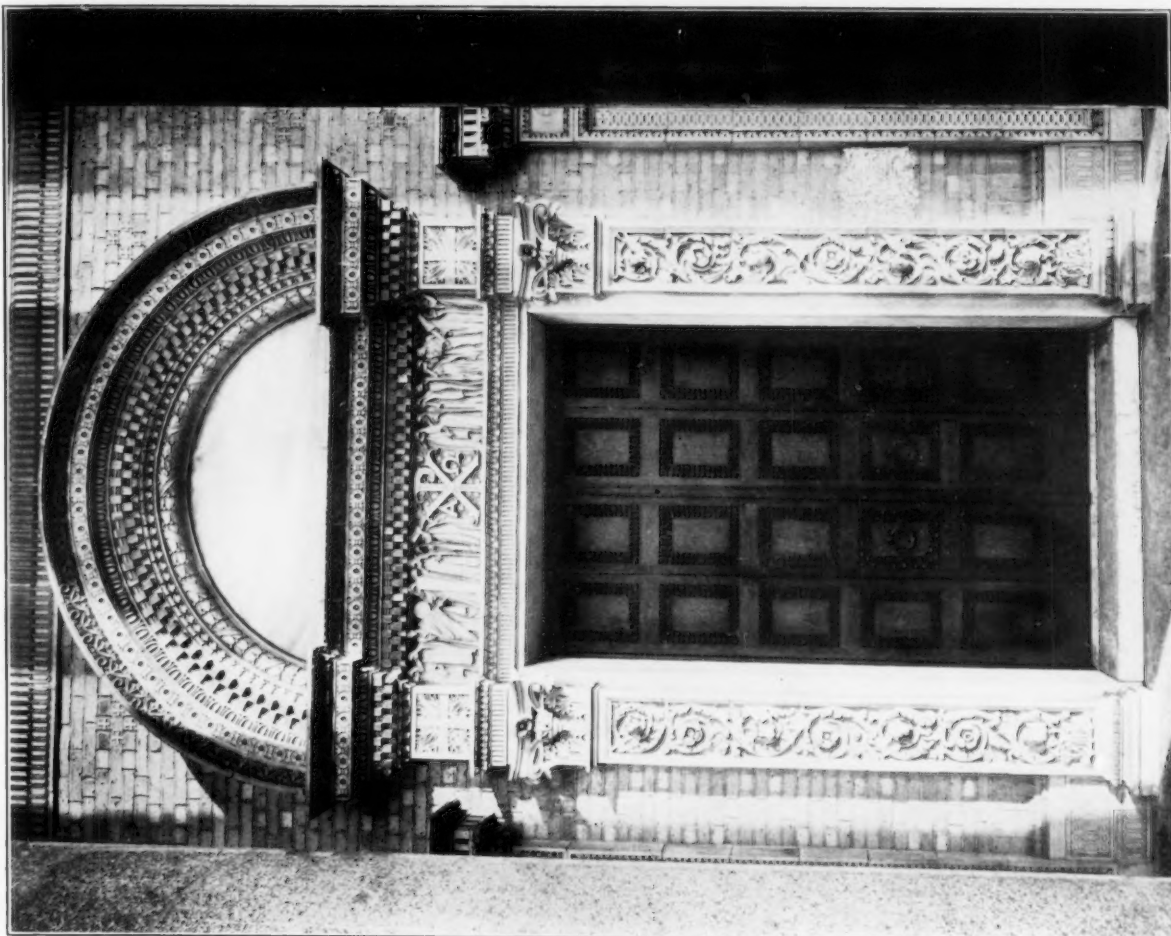
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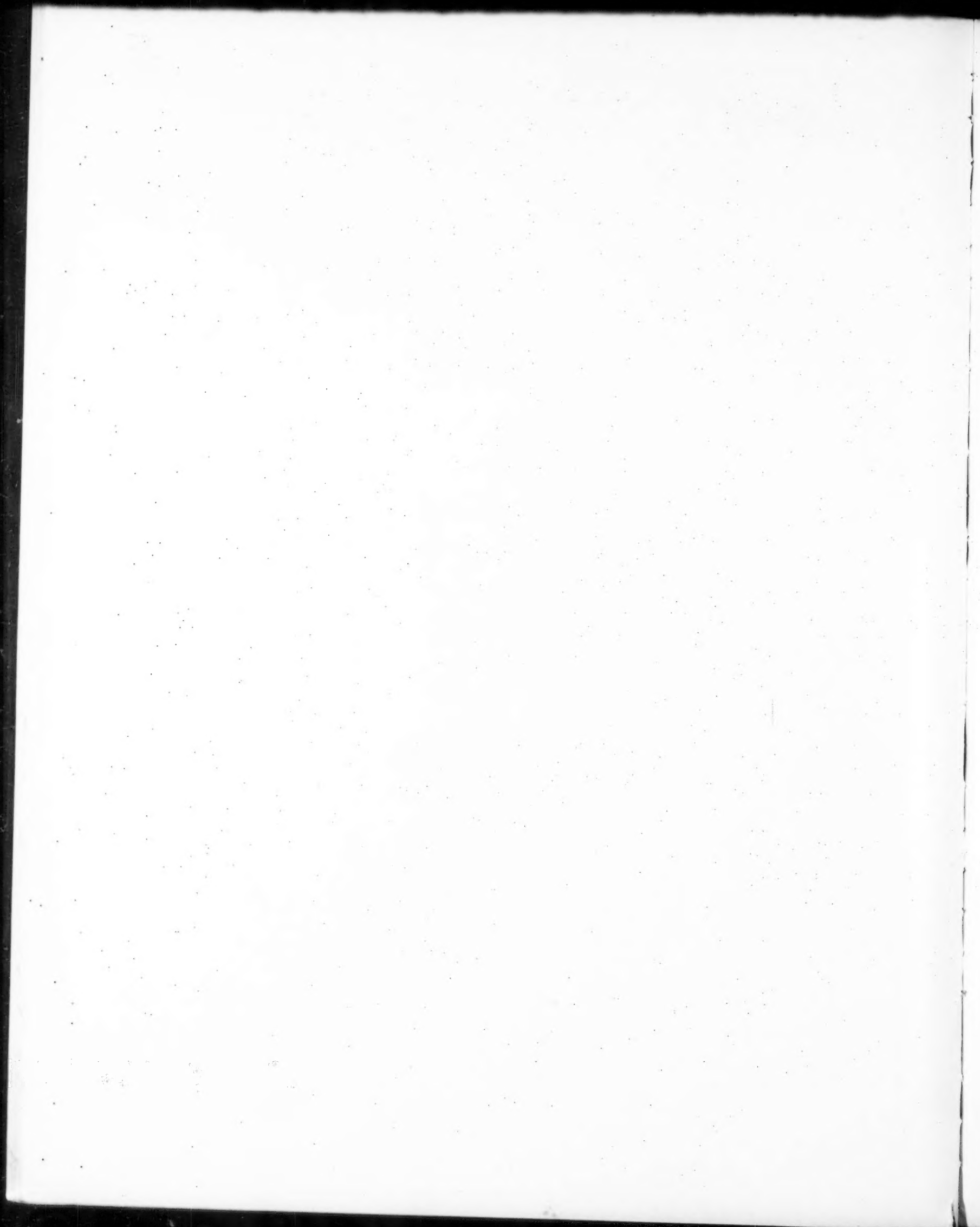
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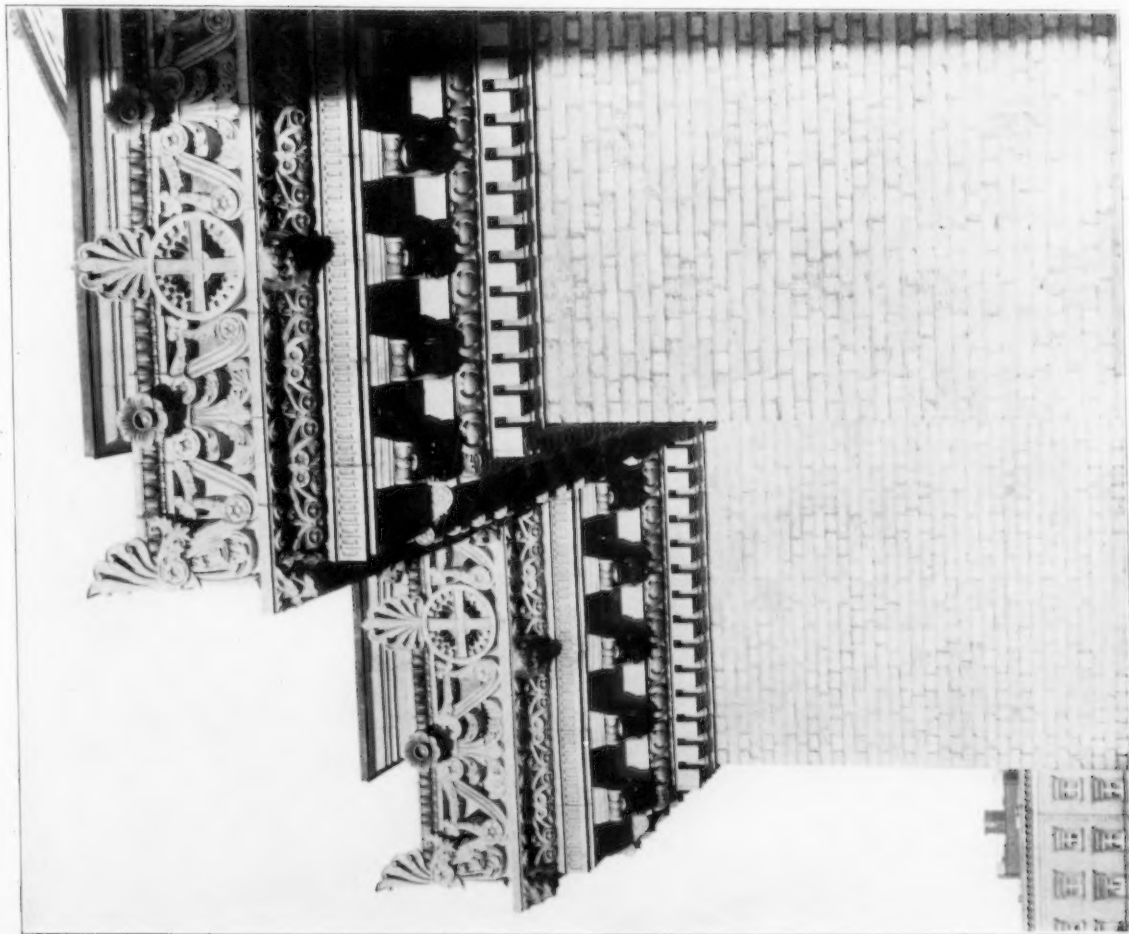
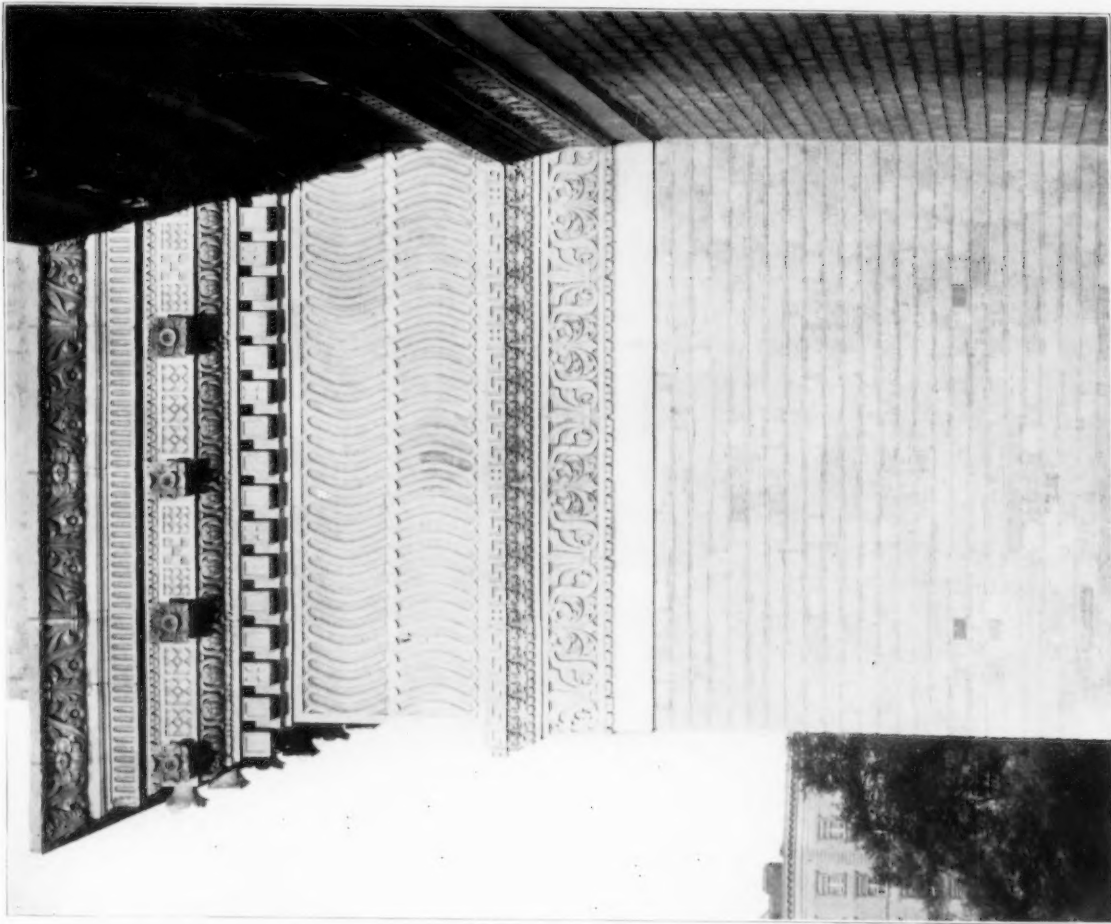




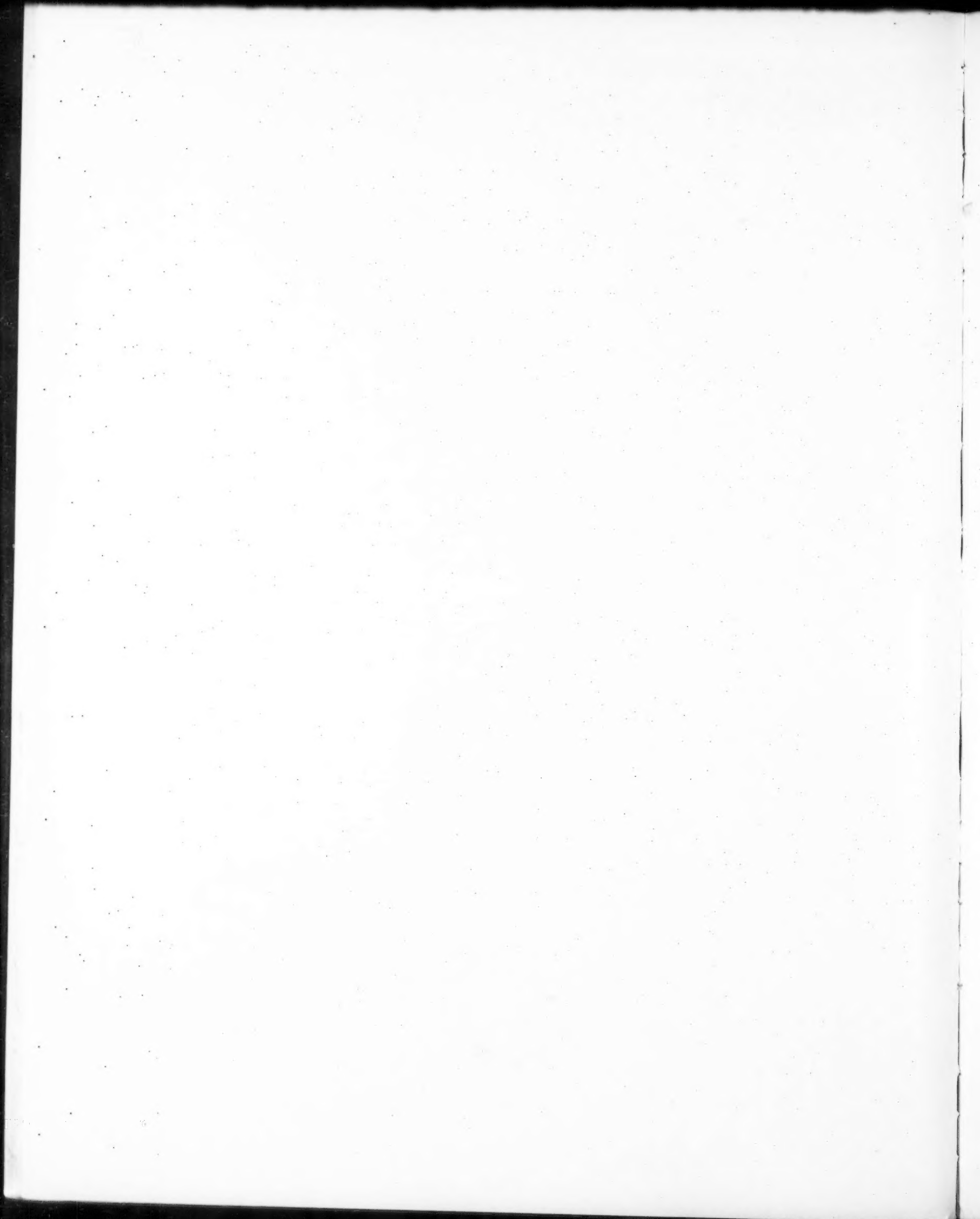
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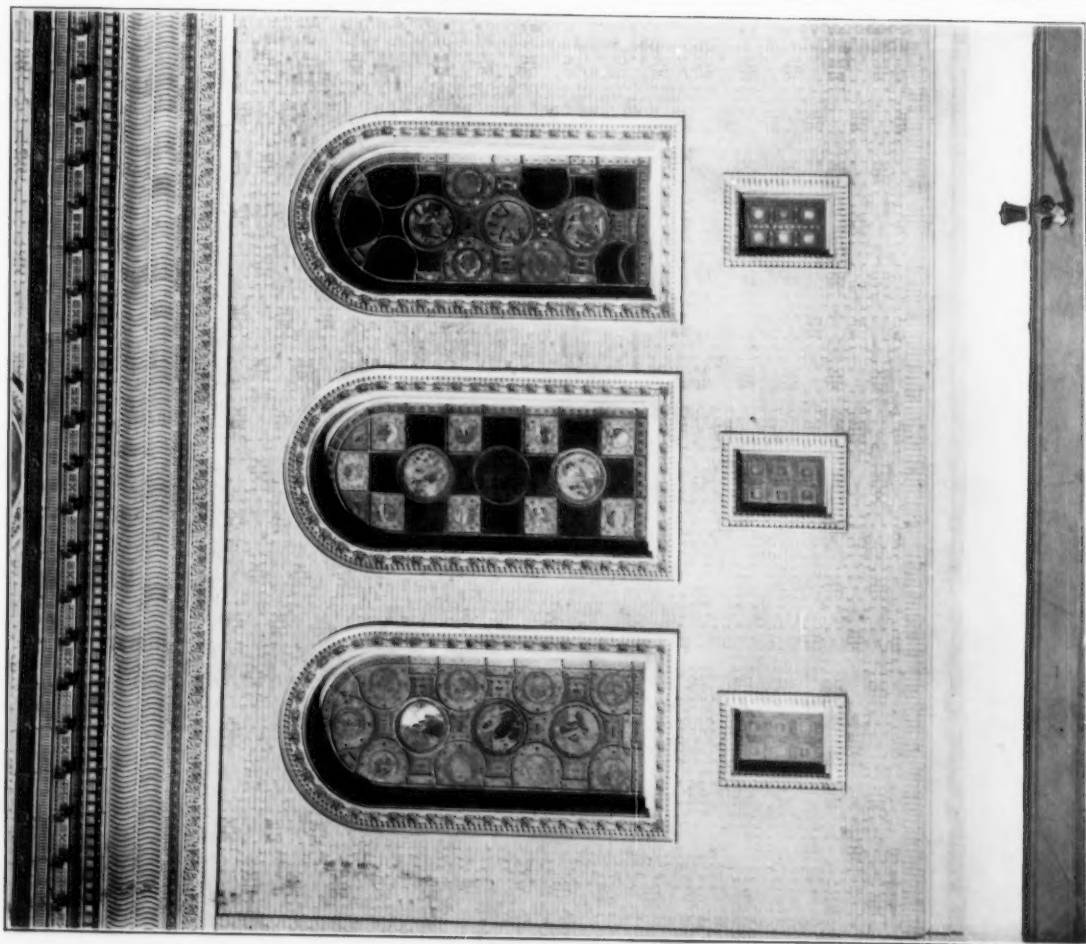
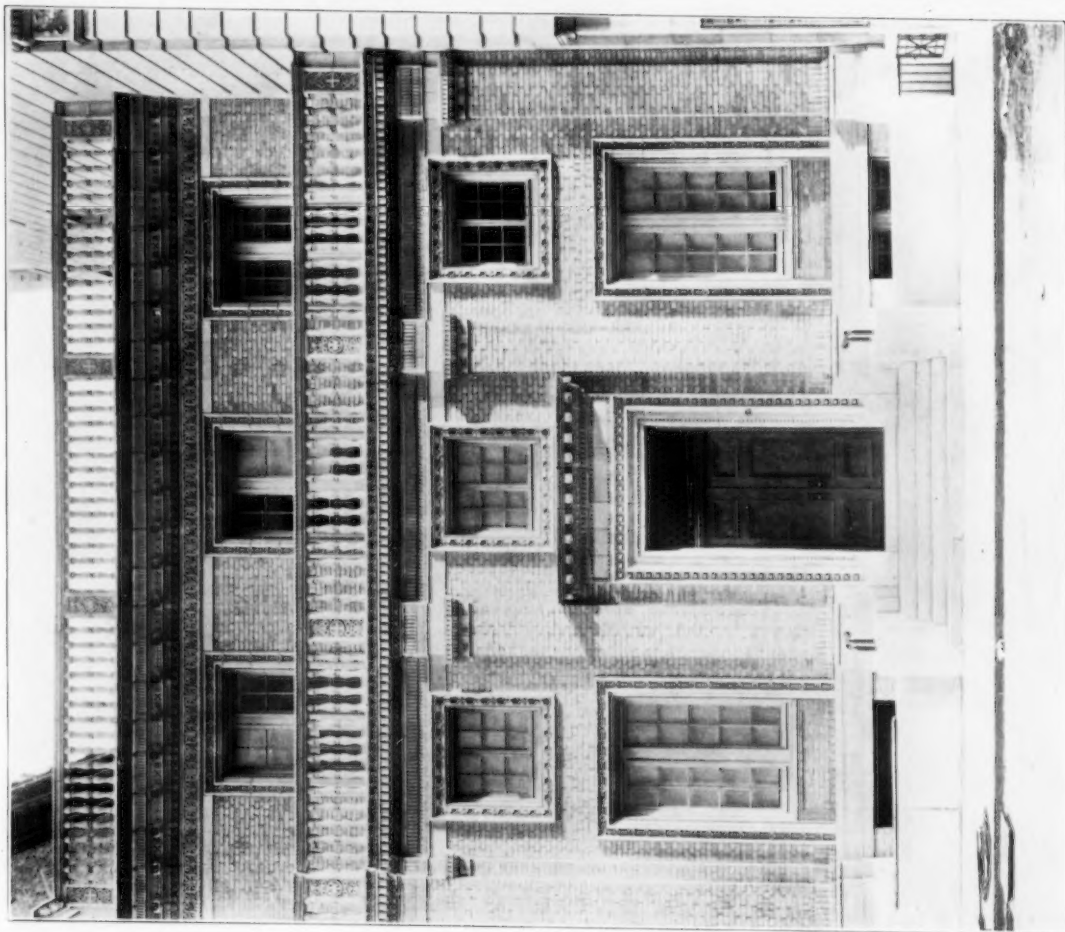




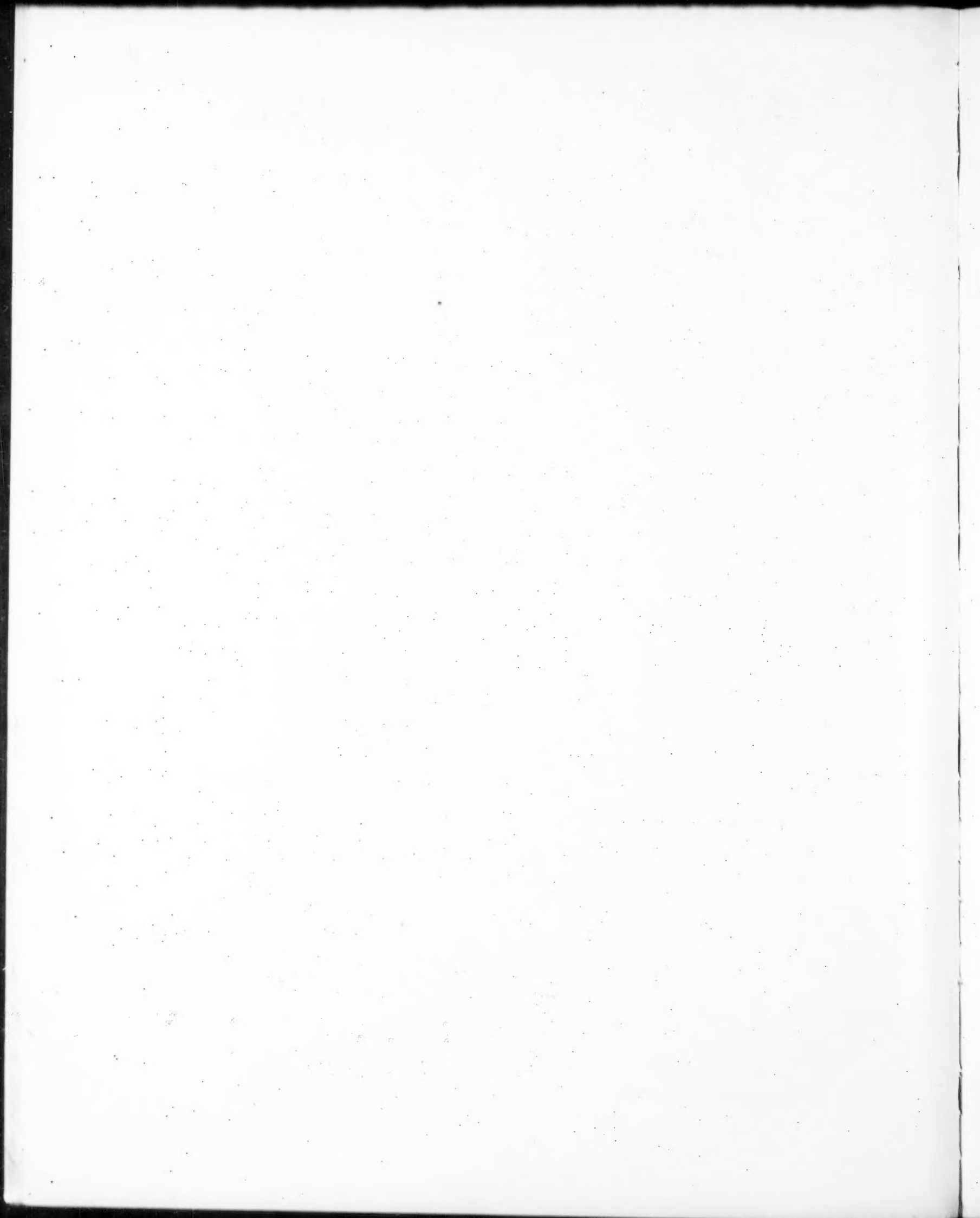
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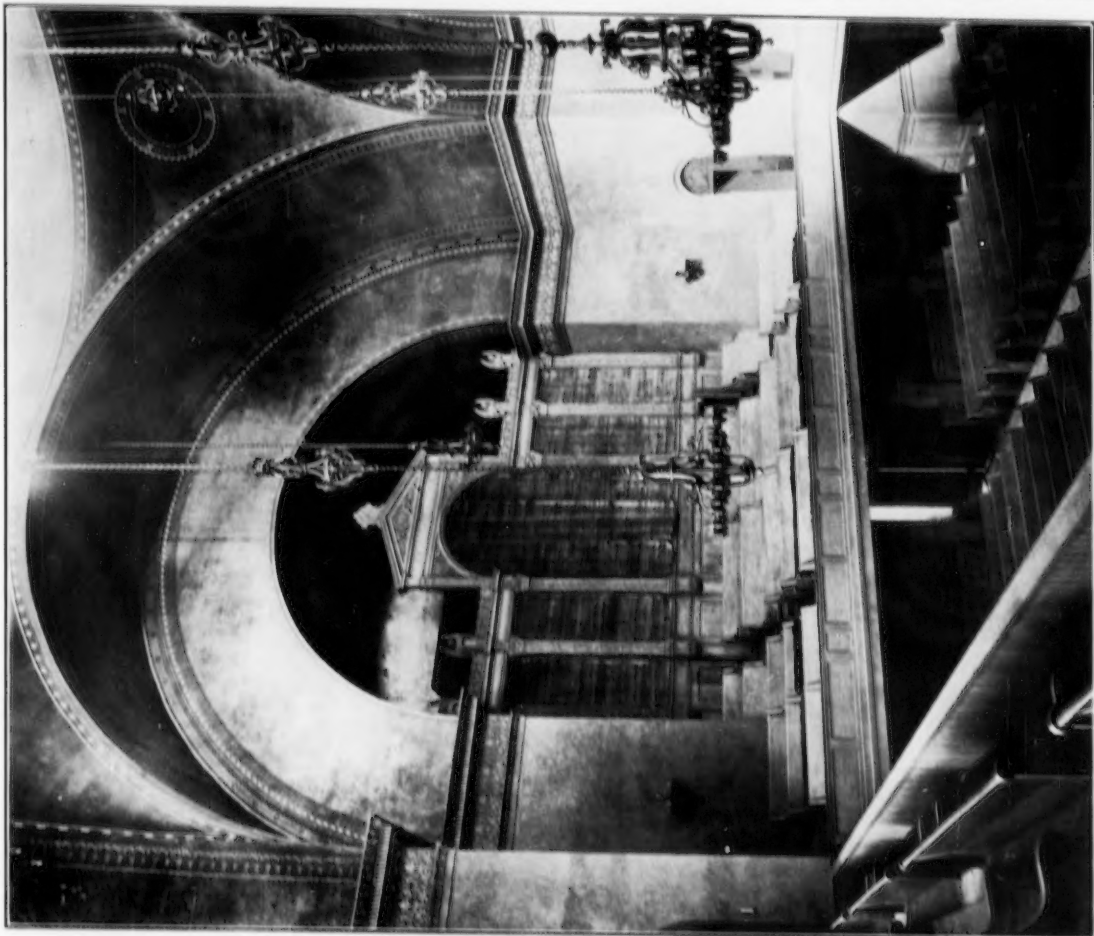




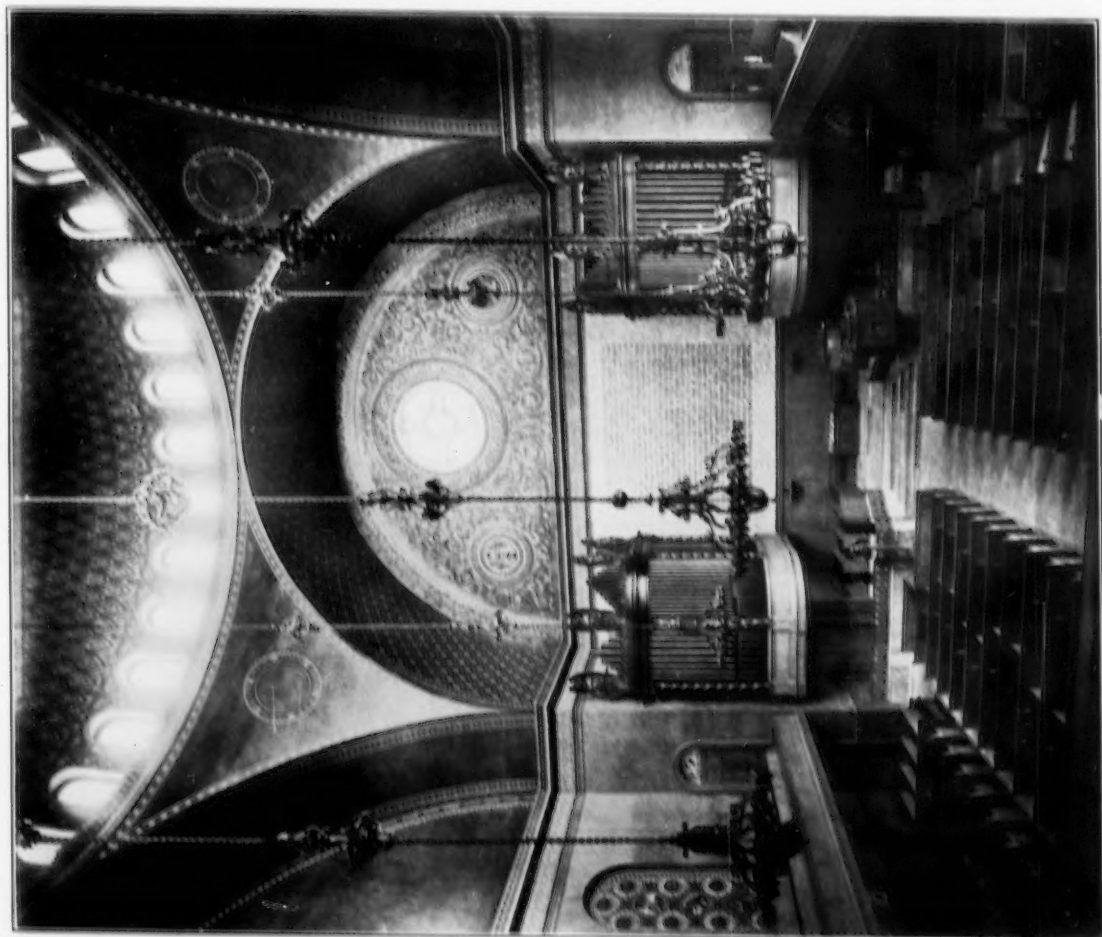


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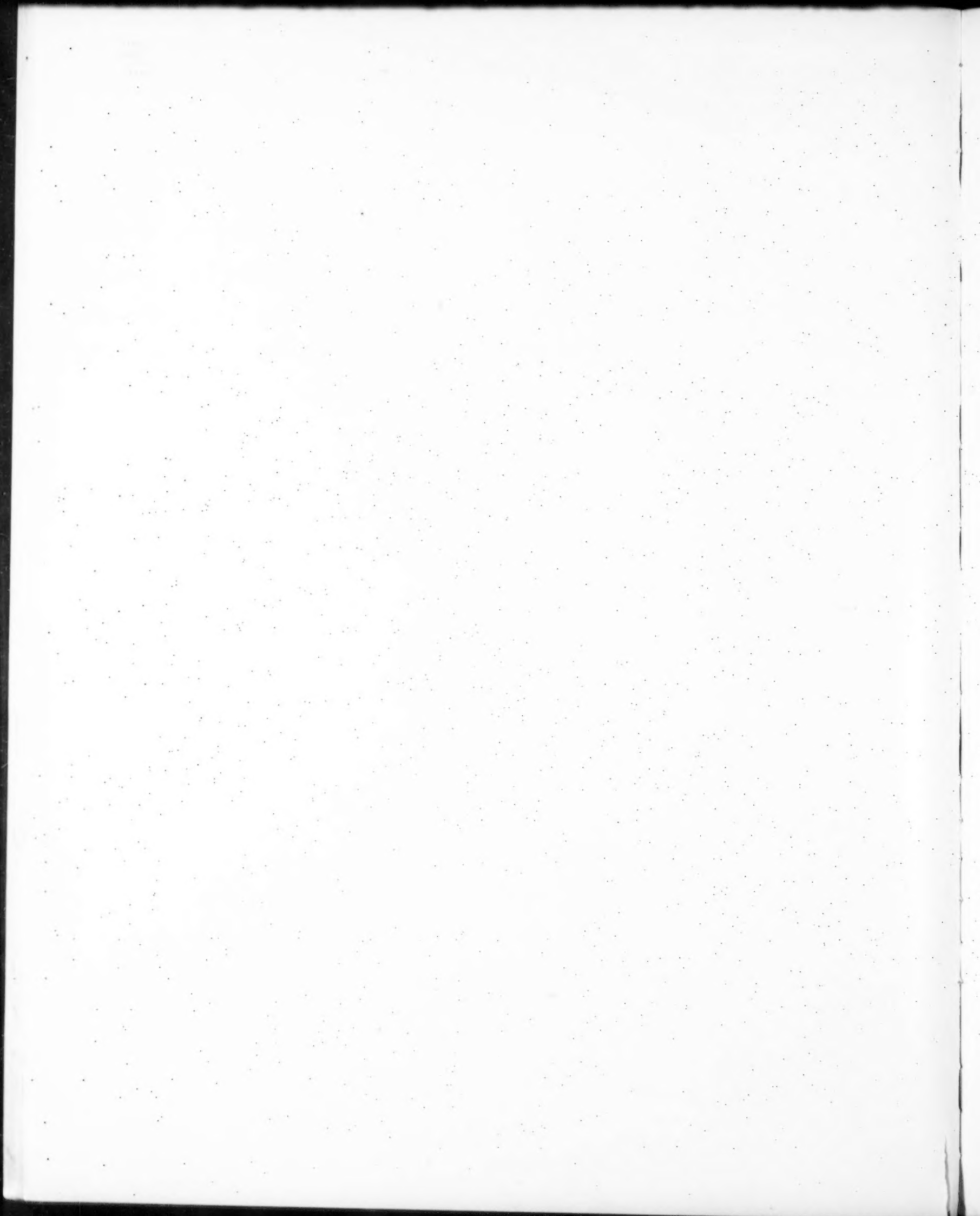
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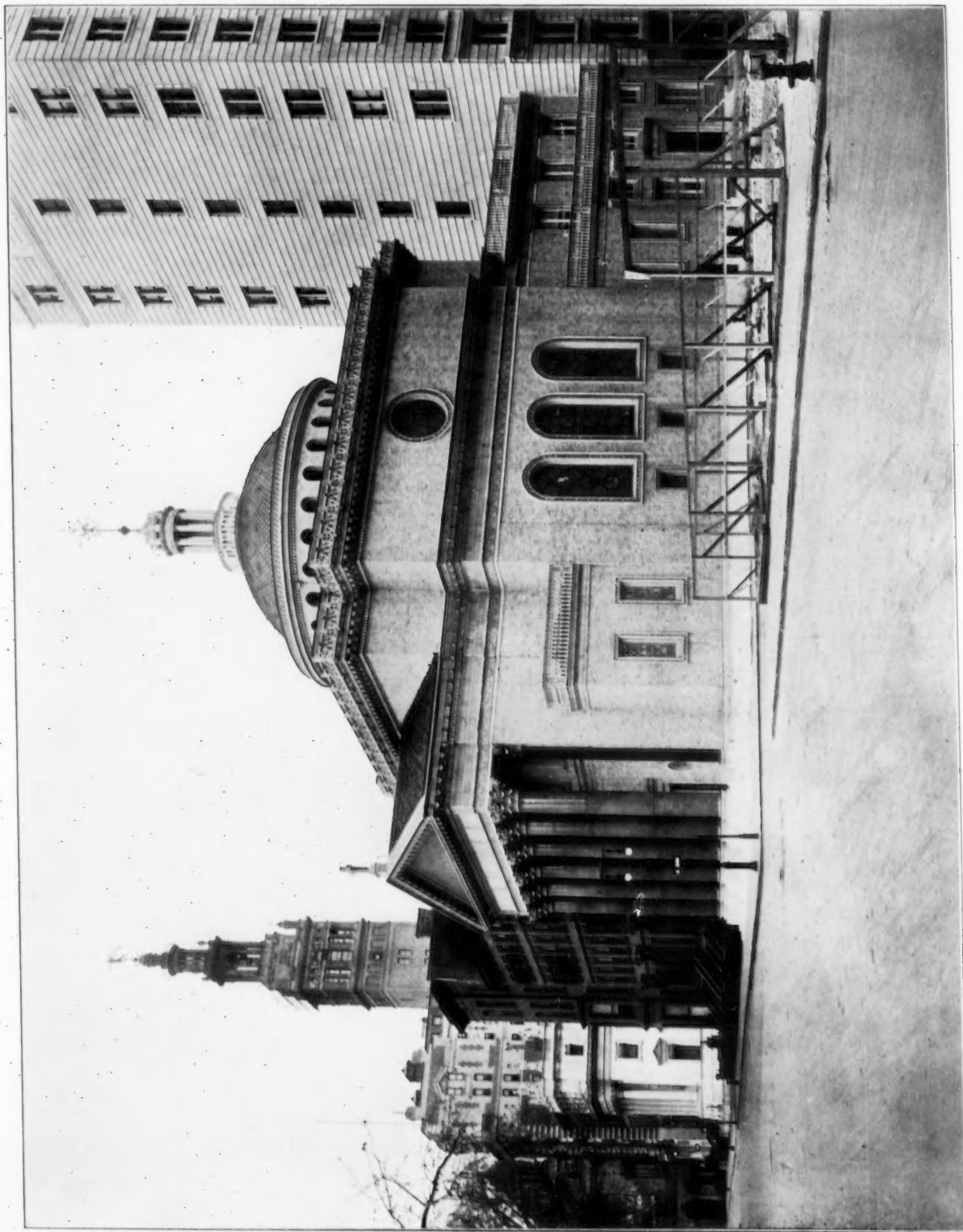
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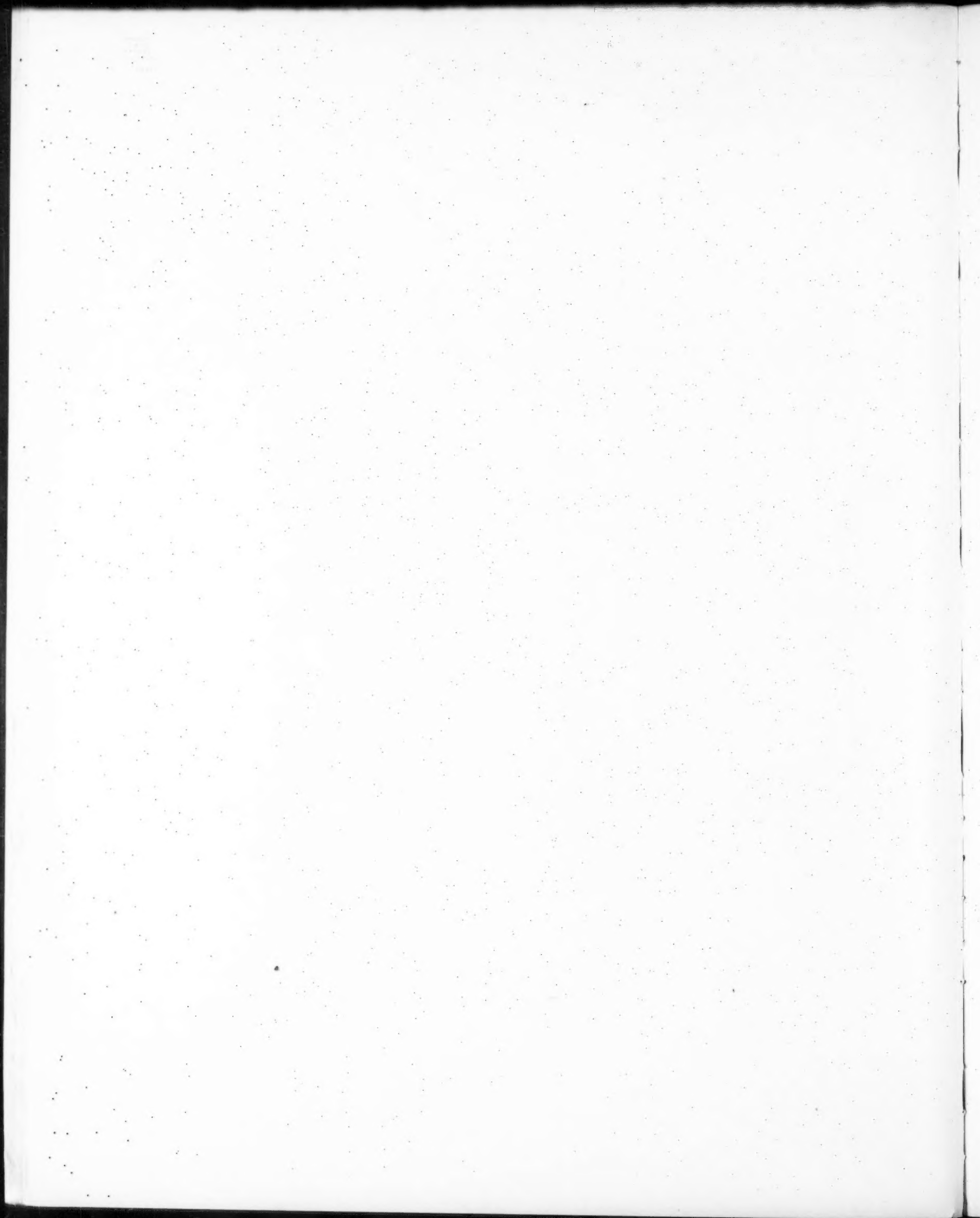
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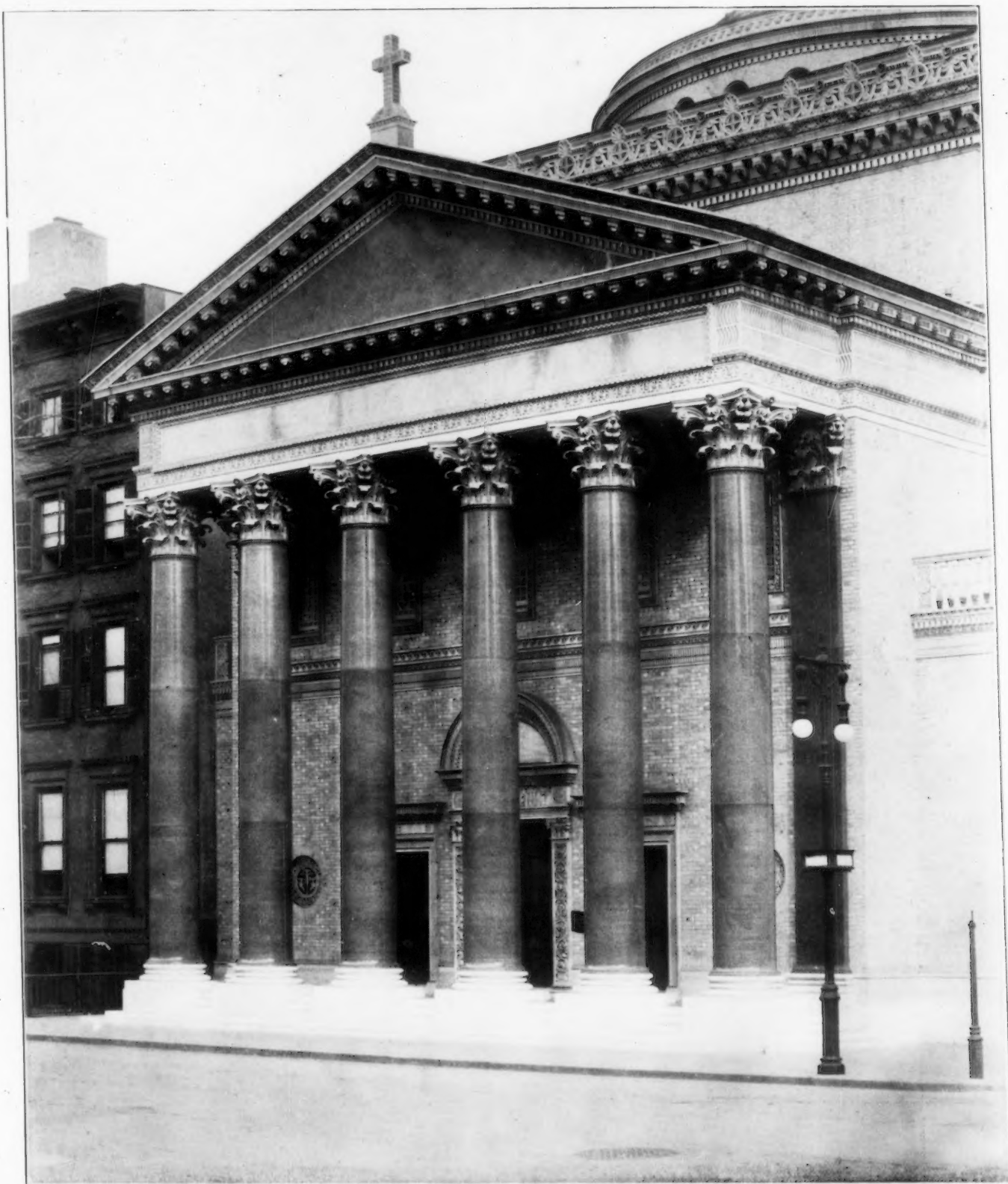




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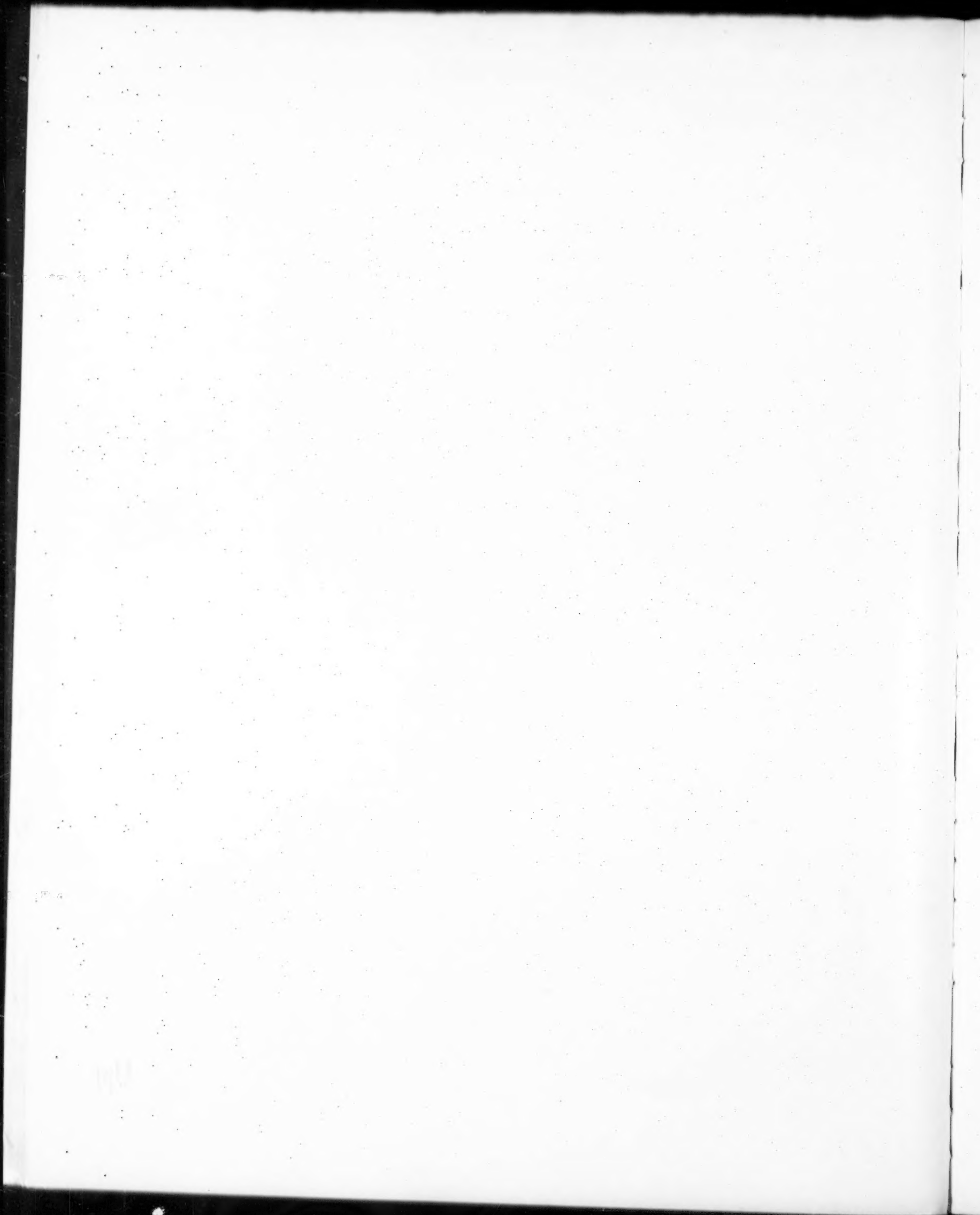






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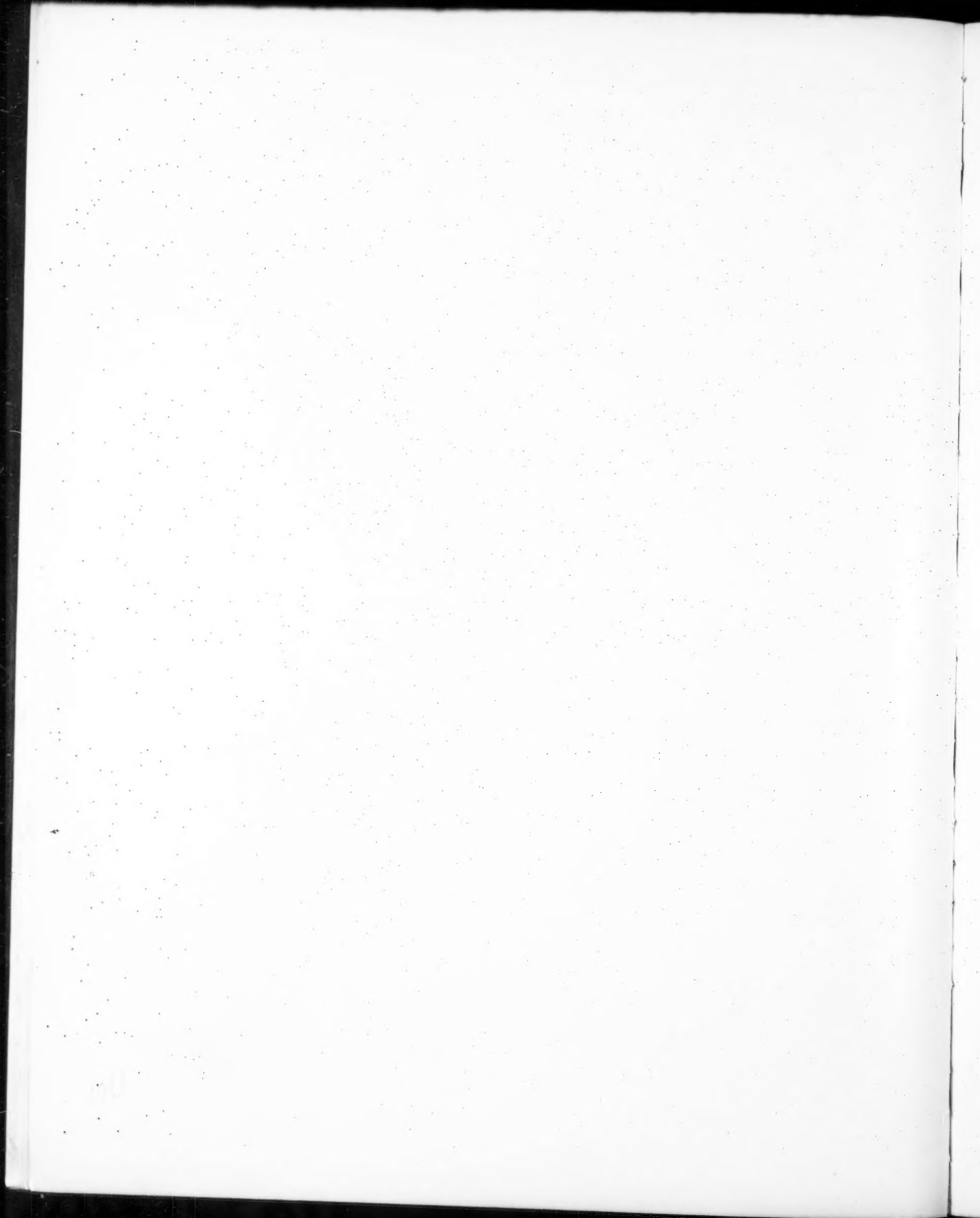
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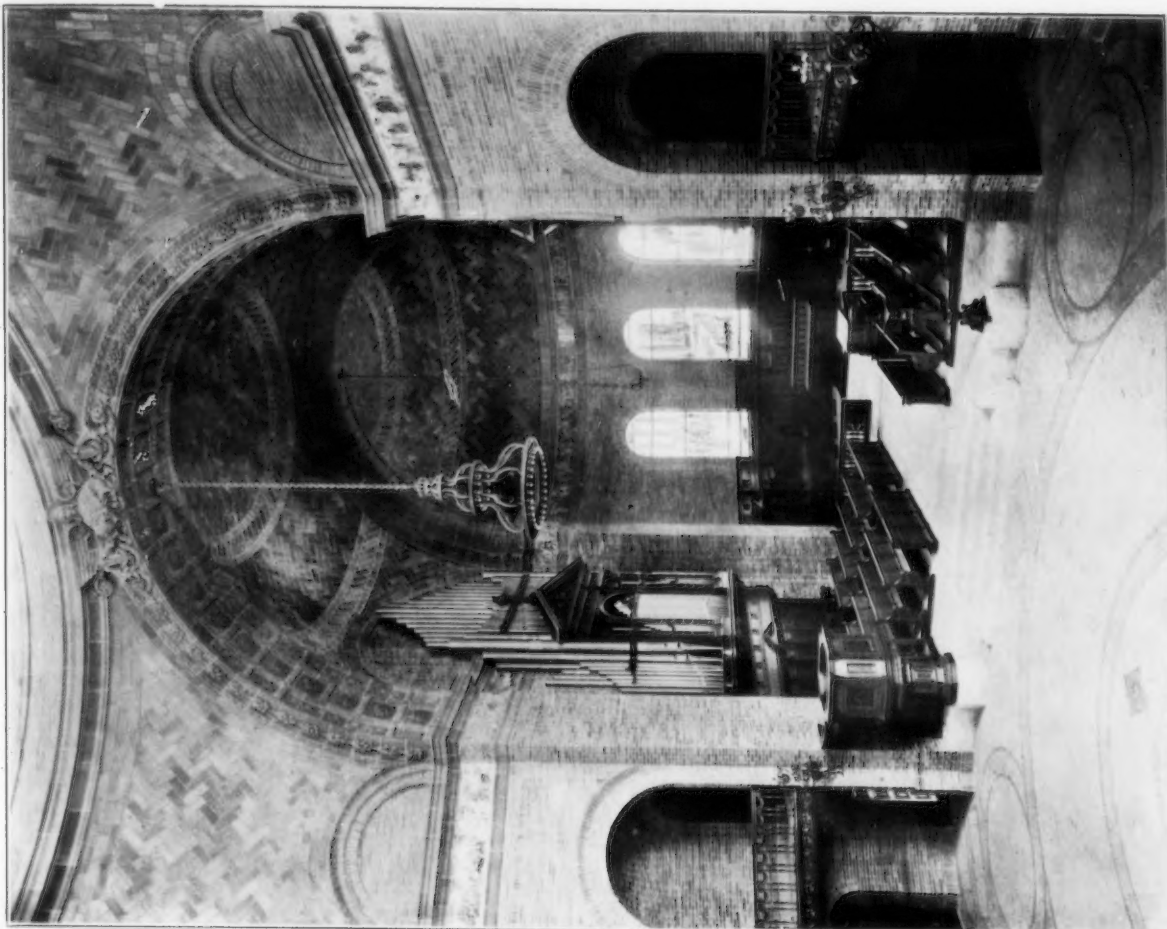




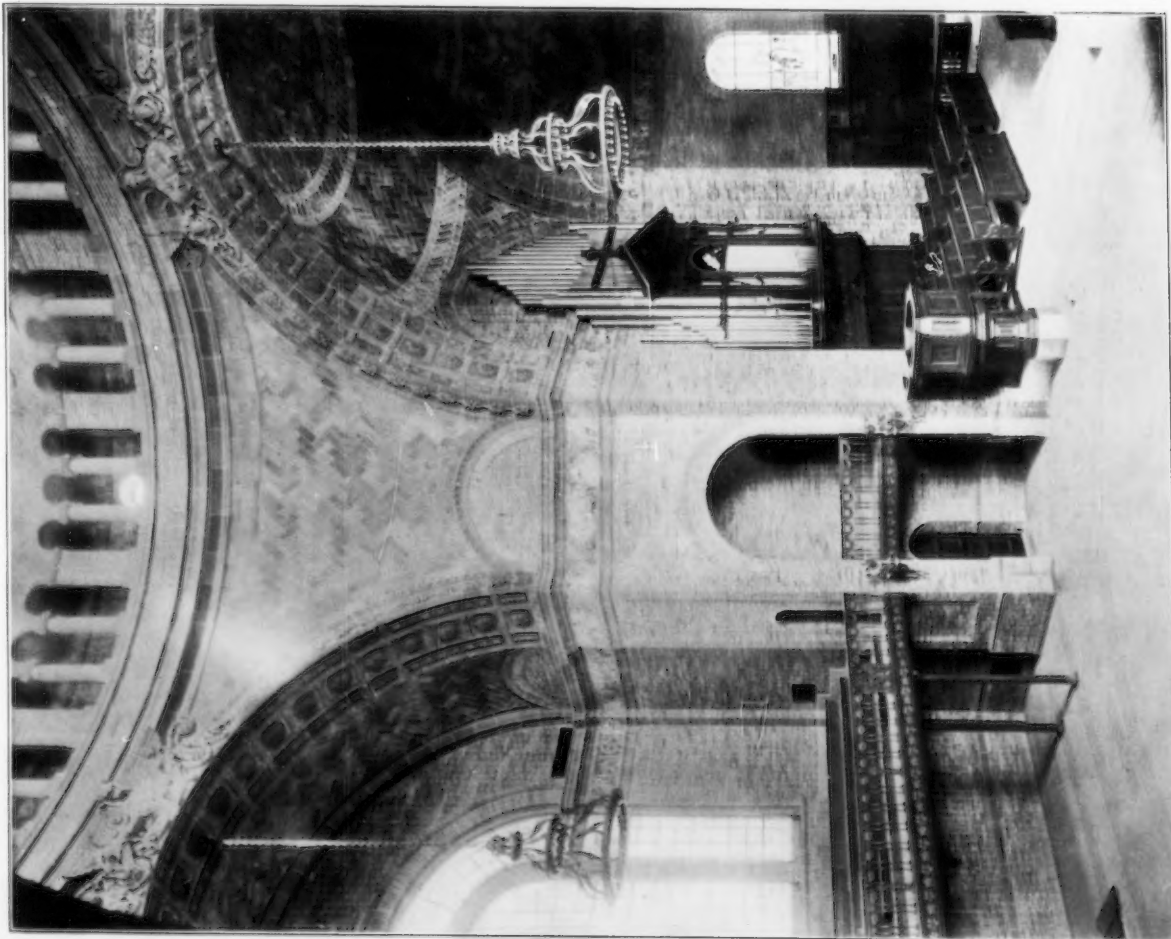
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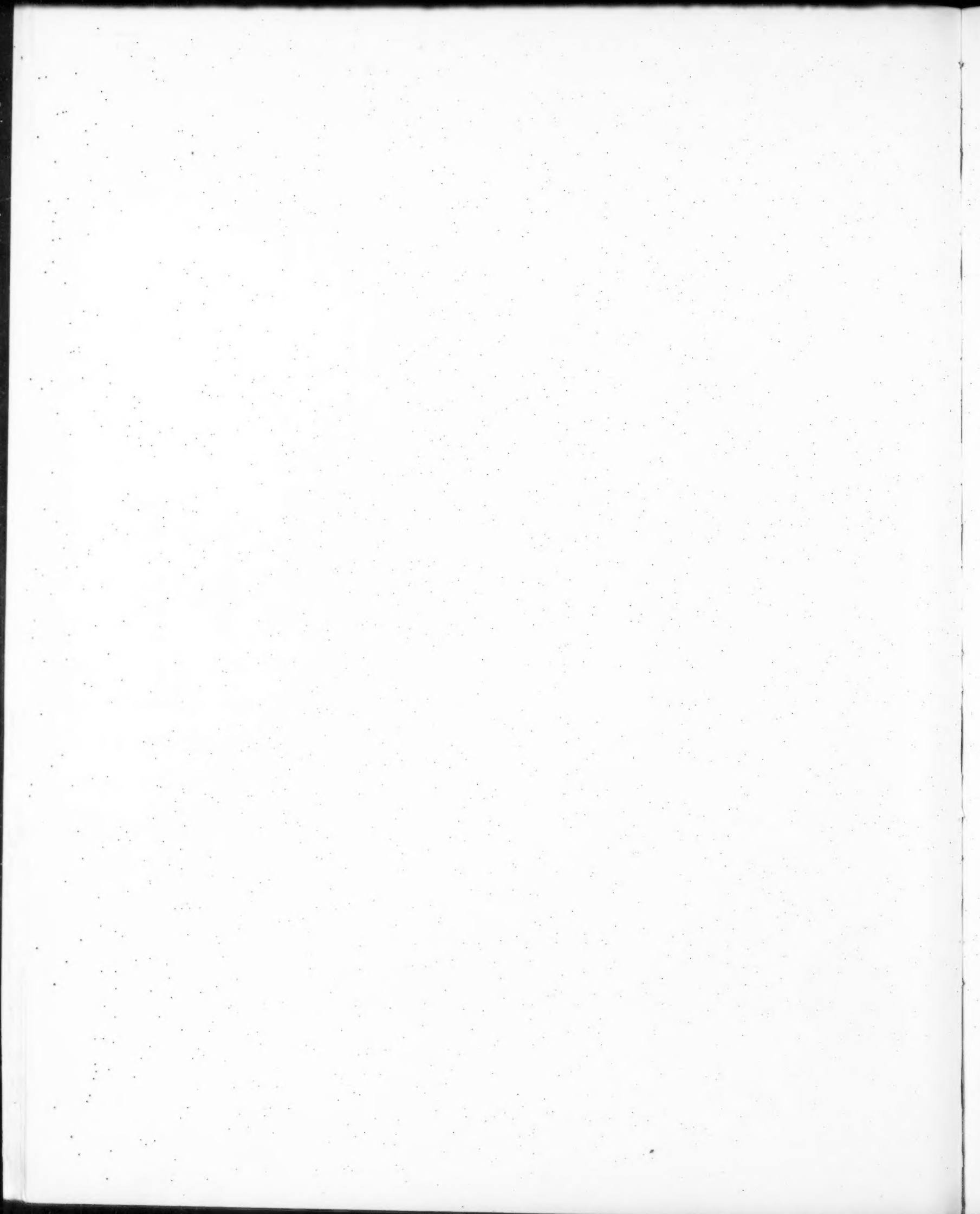


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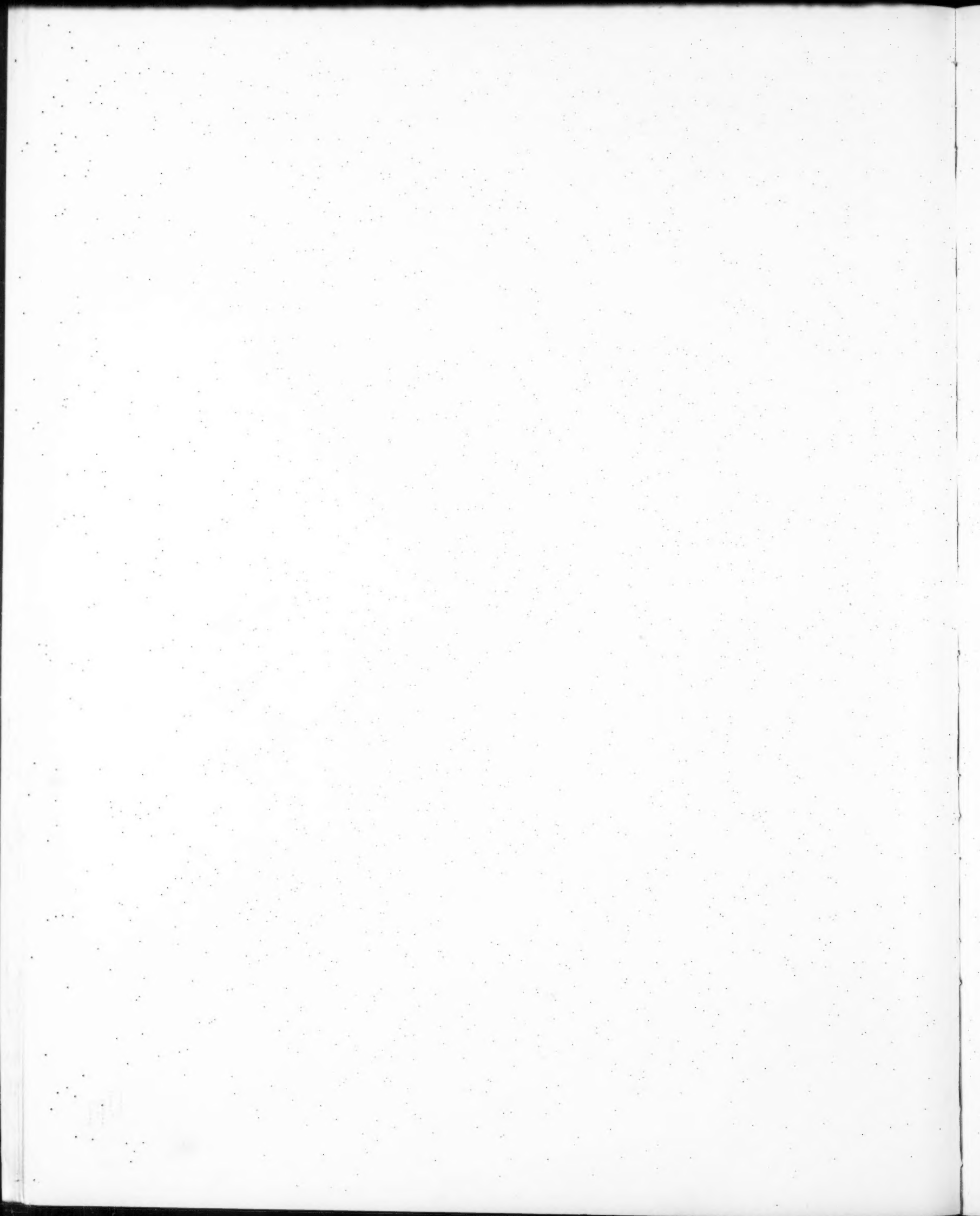


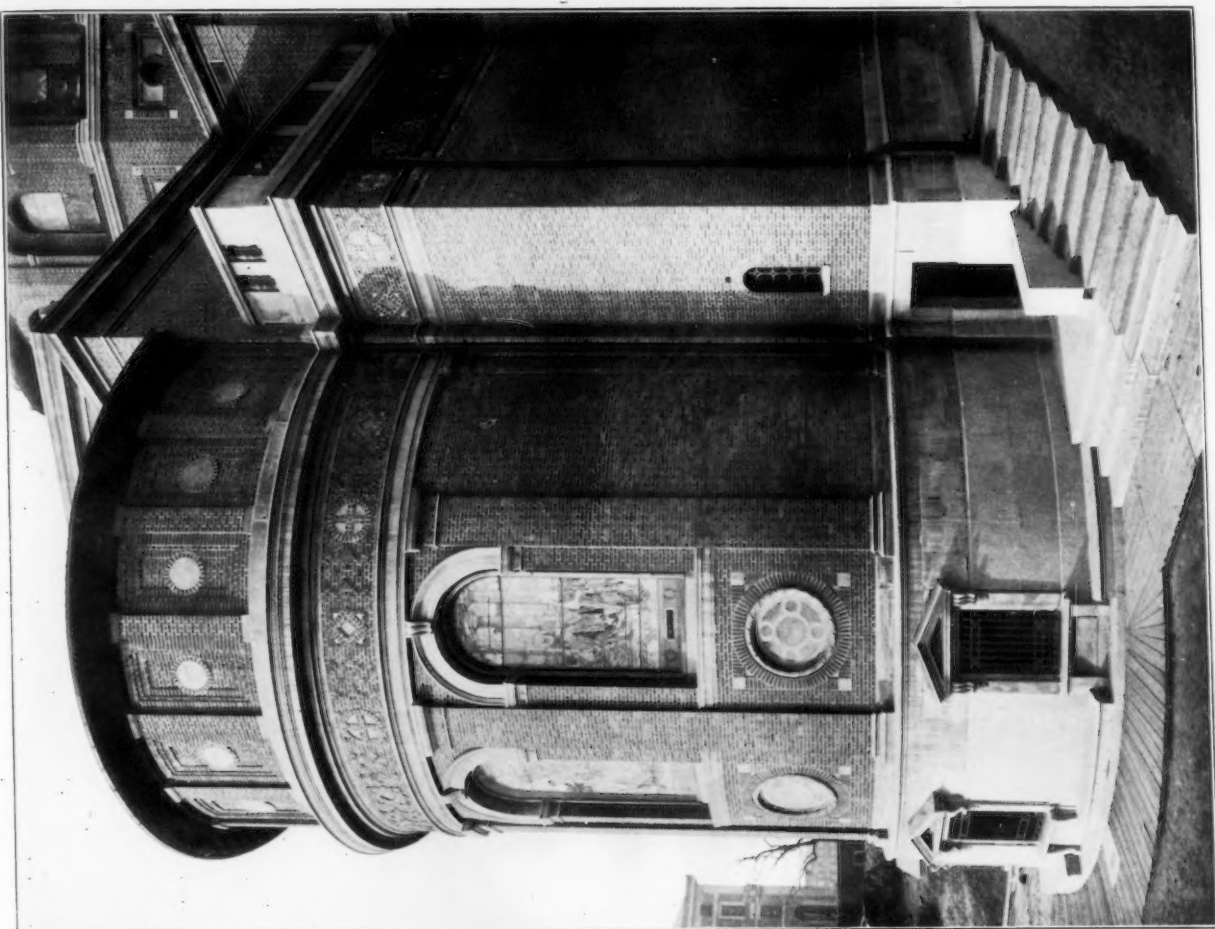




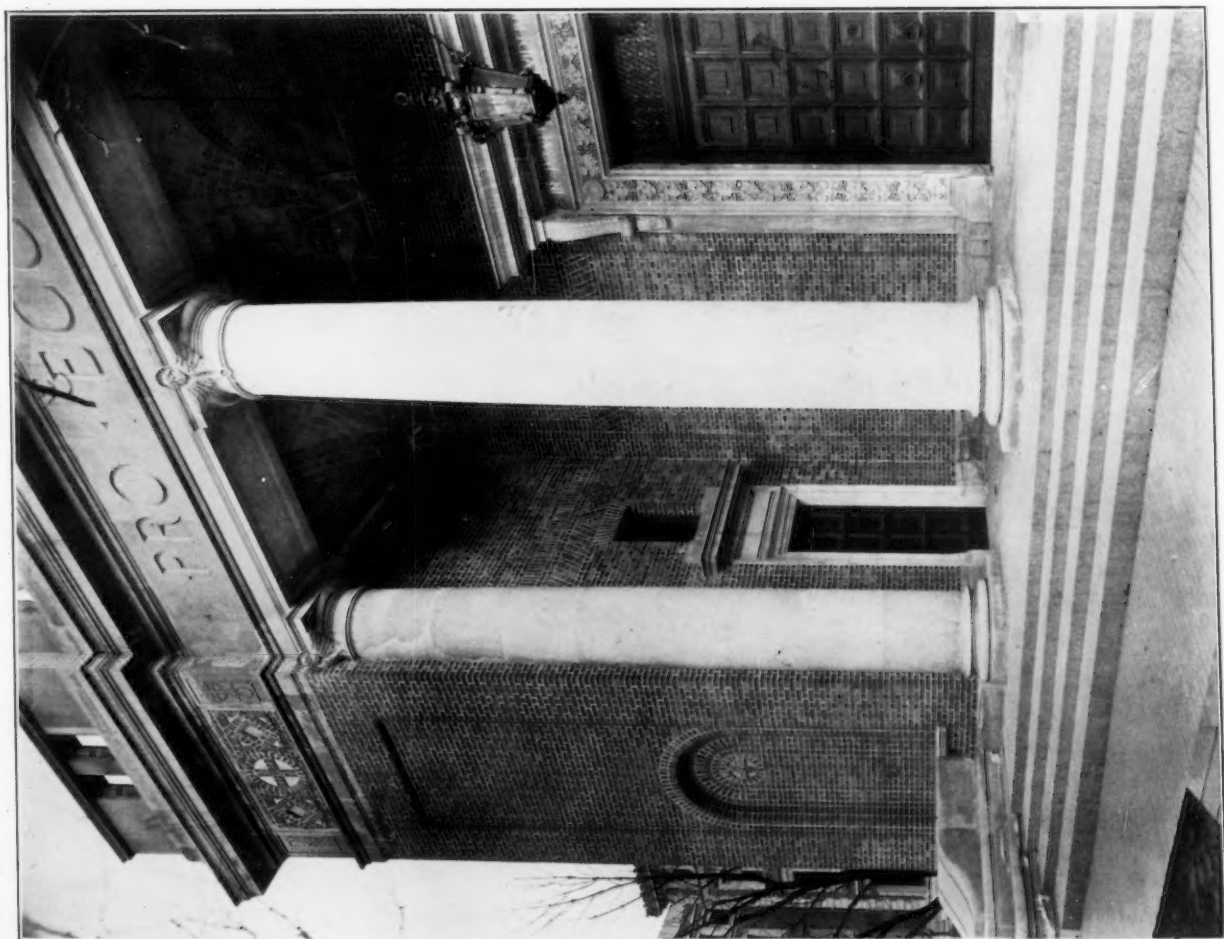
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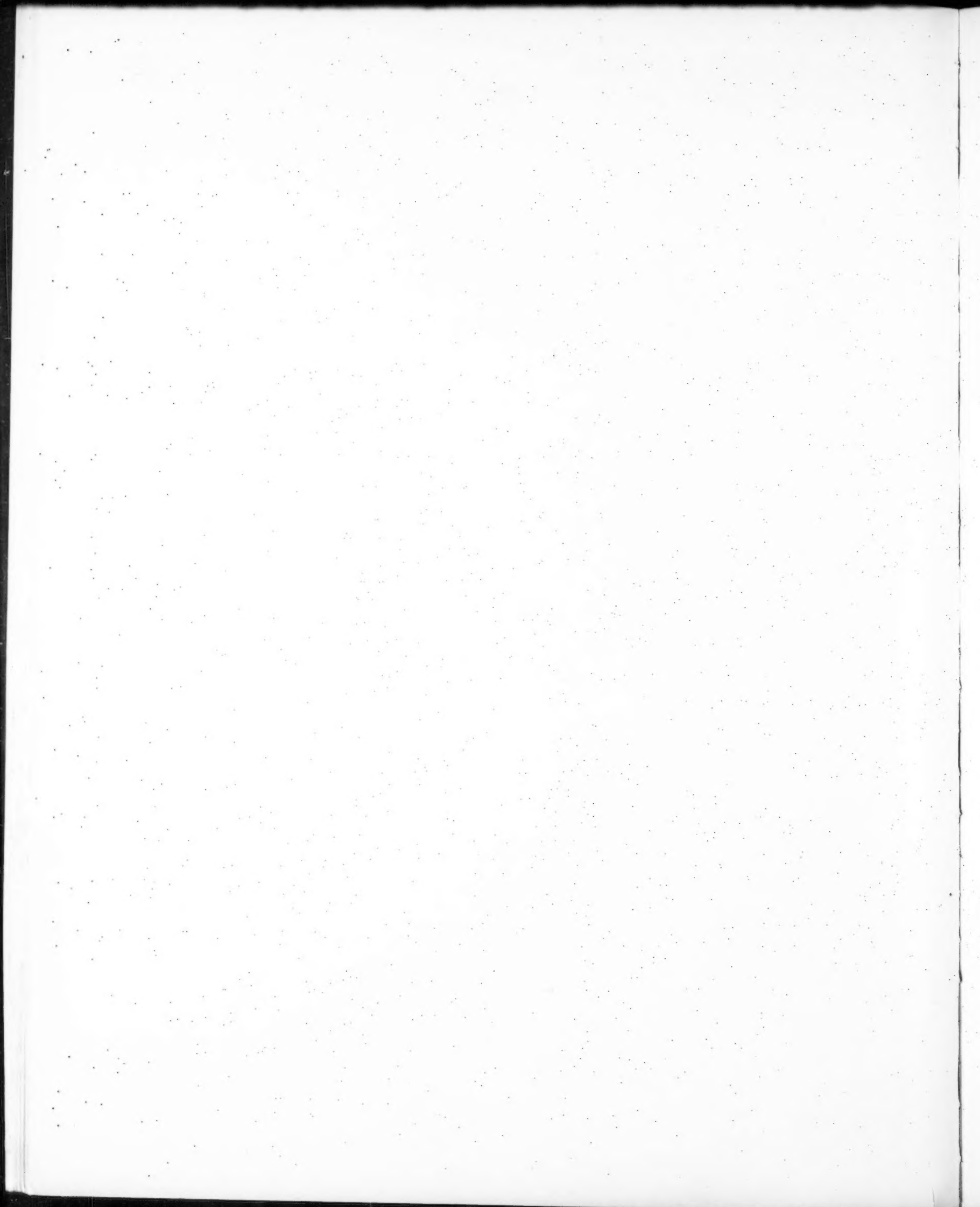
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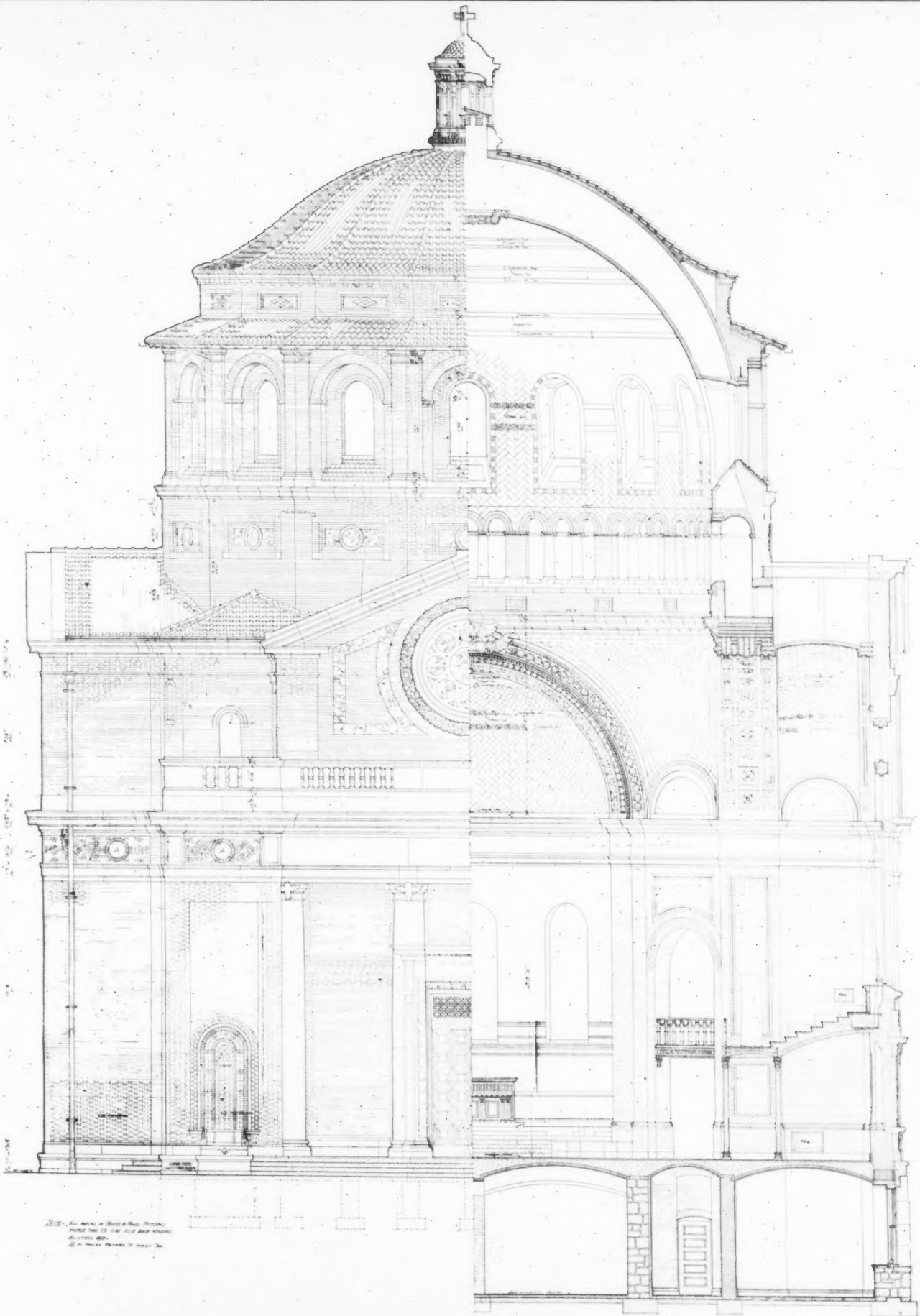


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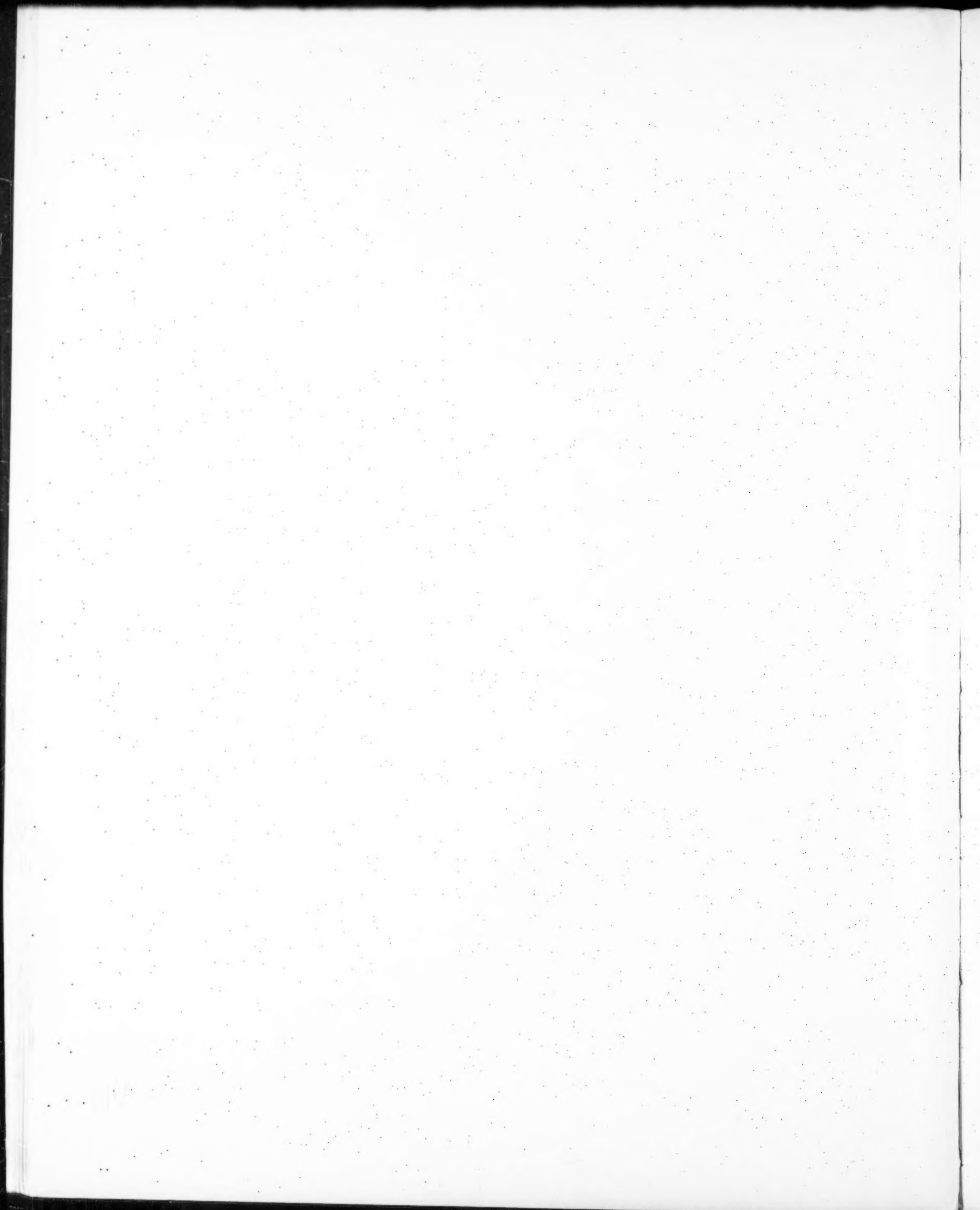
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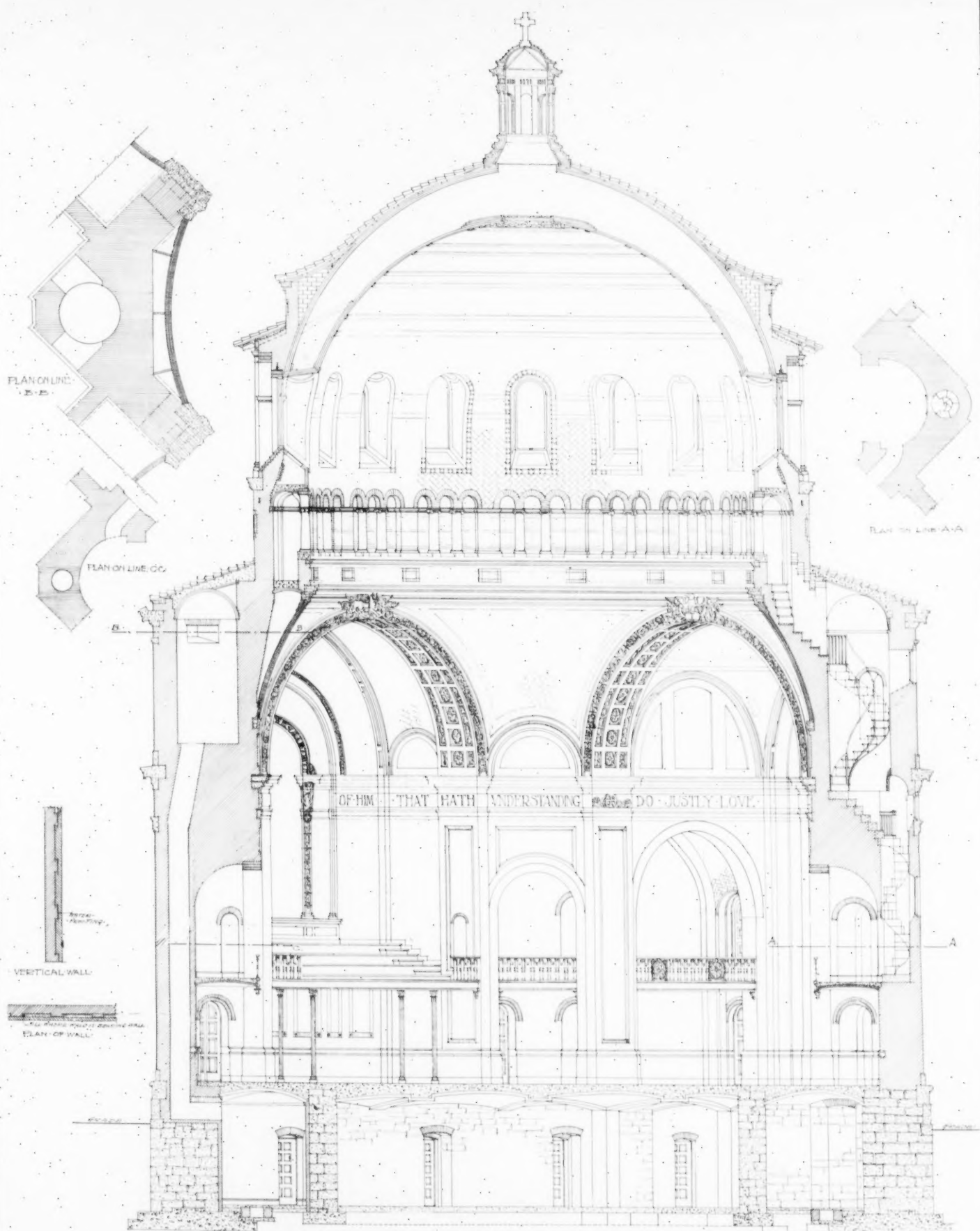




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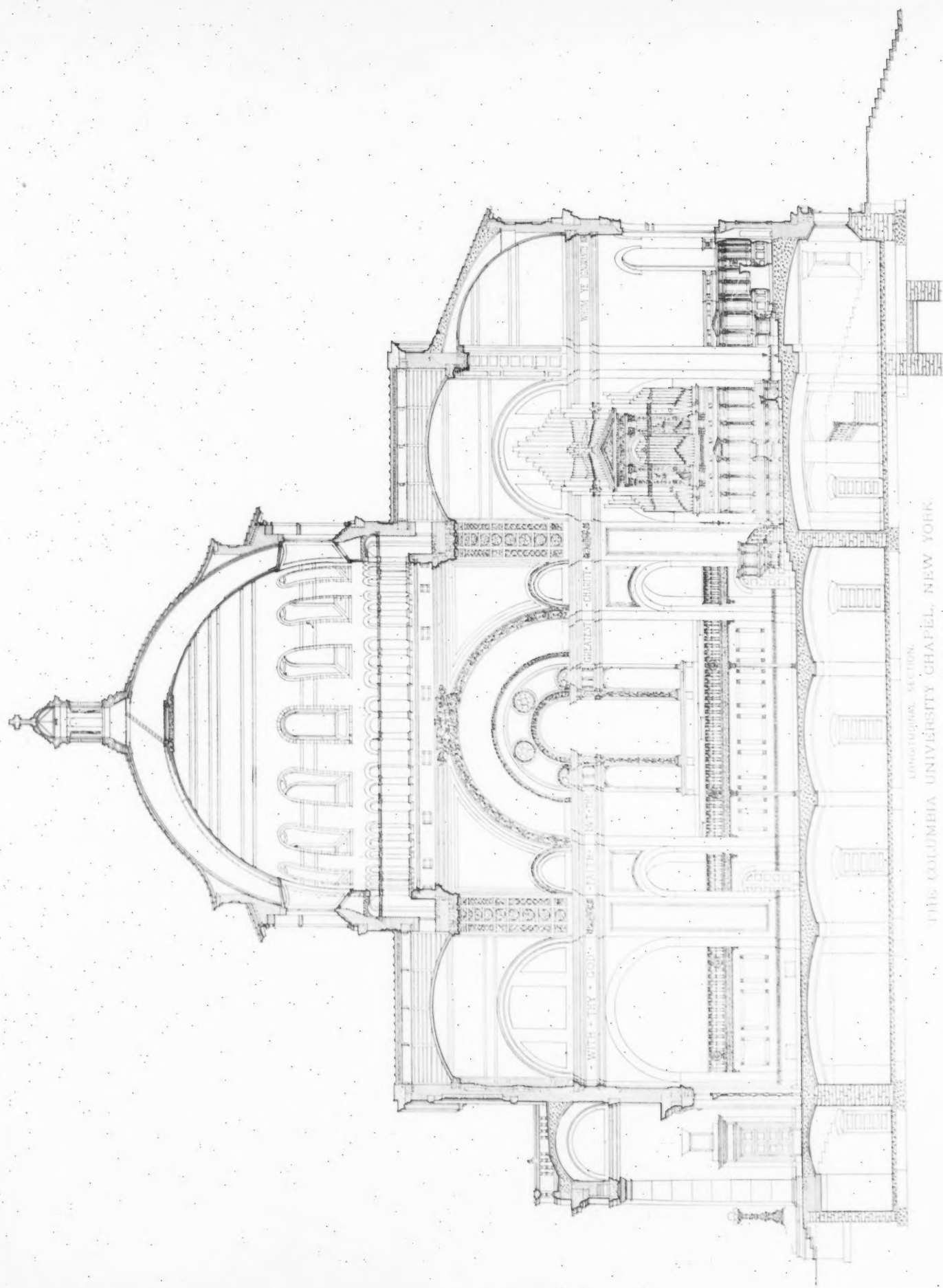


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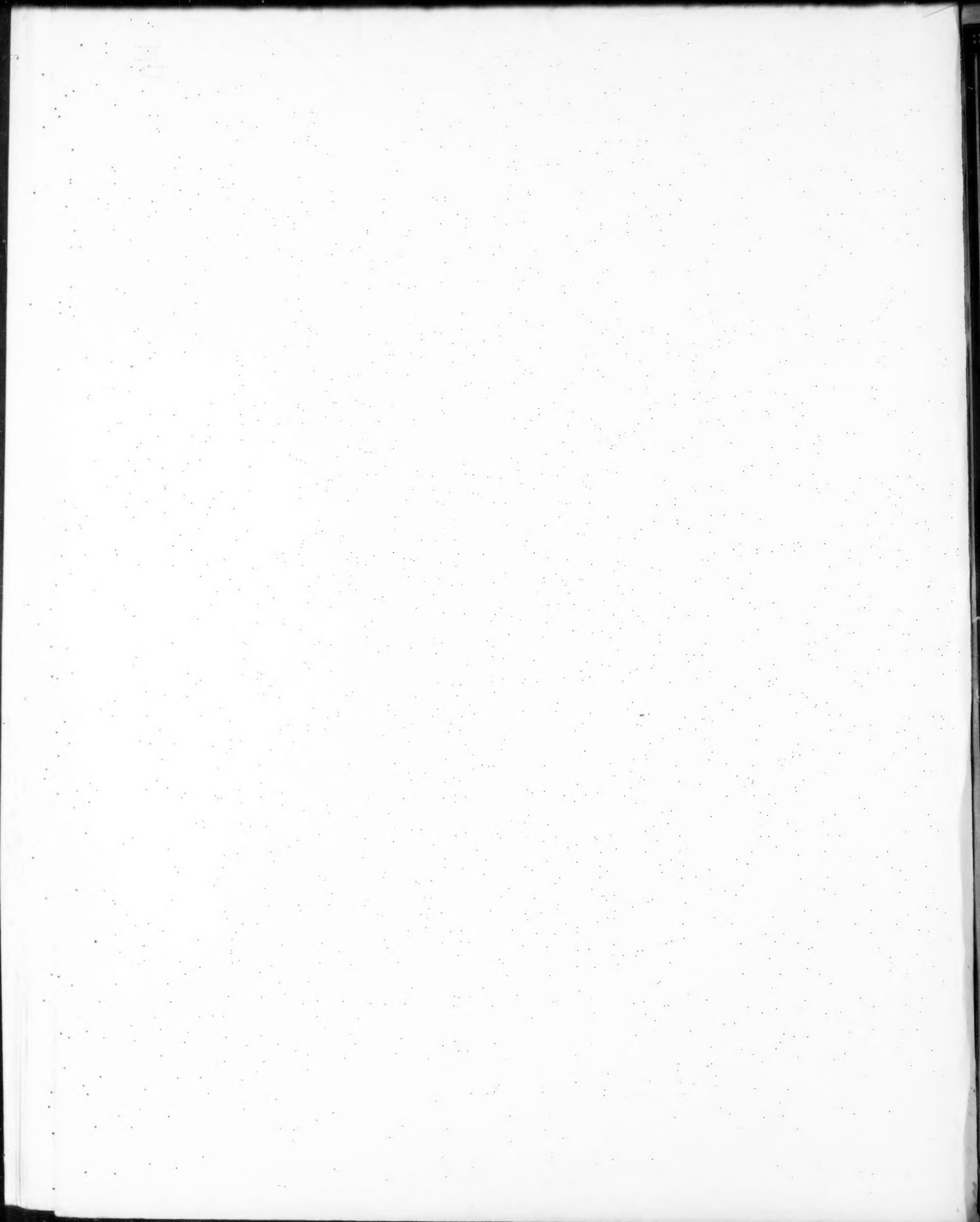
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